

SCOREBOARD SYSTEM UPGRADE AT COORS EVENT CENTER

For

University of Colorado
at Boulder

PROJECT MANUAL

100% Construction Documents

4/21/2010

SCD Project Number 0927

University Work Order PR004877



SINK COMBS DETHLEFS

A Professional Corporation for Architecture



ADVERTISEMENT FOR BIDS

State of Colorado
University of Colorado
Notice Number: 10- 08

Project No: PR 004877

Project Title: EVNT: Main Event Area – Install Video Boards

Estimated Construction Cost: \$930,000.00

Project Description

The project is being bid to retain an electrical contractor who shall be the prime General Contractor to supervise and coordinate the installation of Daktronics Video upgrades, as an extension to the existing Daktronics Score Board system, in the Coors Events Center. There will be associated electrical work to support this upgrade. The video equipment vendor will be a sub to the General Contractor. The General Contractor shall provide for all structural mounts/attachments as required and provide for the lifting of the equipment in place and restoration of paint finishes.

Project Information

1. The Principal Representative has determined that the entire project shall be substantially complete within 95 calendar days, from the date of the Notice to Proceed, and the project shall be finally complete, including the delivery of any or all guarantees and warranties, the submittal of sales and use tax payment forms, the completion of the final punch list and the calling for final inspection, within 14 calendar days, if applicable, from the date of substantial completion. In accordance with Article 46 of the General Conditions of the Contract, Time of Completion and Liquidated Damages, failure to complete the work within the agreed number of calendar days shall be considered breach of contract and subject the bidder to liquidated damages to the extent specified in Article 54D of the General Conditions of the Contract.
2. The right is reserved to waive informalities or irregularities and to reject any and all Bids.
3. **Bidders may procure Bidding Documents from the following website on <http://www.colorado.edu/facilitiesmanagement/pdc/construction/open.html>**
There will not be a charge for Contract Documents downloaded from the website.
4. Contact Steve King at king@sinkcombs.com to arrange for prints if needed. A \$50.00 is required for each complete set of Contract Documents. Make check payable to Sink Combs Dethlefs Architects. This deposit shall be a guaranty that the documents will be returned in good condition. Such deposits will be returned to (1) Actual Bidders who return the documents before the termination of five (5) business days after the opening of the Bids, (2) Other interested parties who return the documents within five (5) business days after checking them out. Additional copies of any documents, drawings, or specifications will be supplied at the actual cost of reproduction. Bidders desiring the Architect/Engineer to mail bid documents will be required to pay the full cost of mailing. Such expenses will be non-refundable.
5. Each Bid shall be submitted on the required Bid Form and must be accompanied by a Bid Bond on State Buildings Programs Bid Bond Form Sc-6.14 in an amount not less than 5% of the total Bid. The Bid Bond may also be (1) a cashier's check or (2) a certified check made payable to the Treasurer of the State of Colorado in an amount not less than 5% of the total Bid. The Bid Bond is submitted as a guaranty that the Bid will be maintained in full force and effect for a period of thirty (30) days after the opening of the Bids for the project.

6. The Bidder promises, in submitting his Bid, that if issued a Notice of Award, he will, within the prescribed time, execute the required Agreement, furnish the required Performance Bond, Labor and Material Payment Bond, Insurance Policy and Certificates of Insurance, or forfeit his Bid Guaranty as Liquidated Damages.
7. Preference shall be given to Colorado resident bidders and for Colorado labor, as provided by law.

Pre-Bid Meeting

A mandatory Pre-Bid Meeting will be held on April 20, 2010 at 2:00 PM at the Events Center-Main Concourse Lobby – West Side entrance doors.

Sealed Bids will be received from qualified contractors until this date and time at this location:

Date & Time: April 30, 2010 2:00 PM.

Address: Department of Facilities Management, Research Laboratory No. 2, 1540 30th Street,
Room 321, Boulder, CO 80309

Point of Contact

Name:	Lonnie Greim, Project Manager	Steve King
Agency:	University of Colorado at Boulder	Sink Combs Dethlefs Architects
Phone:	303-440-0212	303-308-0200
Fax:	303-492-4082	email: king@sinkcombs.com
Email:	Lonnie.greim@colorado.edu	

All questions to be emailed to the University project manager and the architect. Please do not call.

This Notice is also available on the web at www.colorado.gov/dpa/dfp/sbrep

Media of Publication(s): The Daily Journal

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Note to Editor: Transmit one copy of the Affidavit of Publication, and invoice to:

University of Colorado at Boulder
Department of Facilities Management
Campus Box 453 UCB
Boulder, CO 80309-0453



City of Boulder
Sales/Use Tax Division
303-441-3050

CONTRACTORS WORKING ON NON-CITY PERMITTED PROJECTS

To all Contractors working within the City of Boulder:

Under Boulder's Revised Code, the contractor is deemed to be the consumer of materials used in the construction project. Contractors may not avoid payment of the City of Boulder sales or use tax by placing provisions in a construction agreement or by using the name of a tax-exempt entity on an invoice or purchase order, regardless that the contractor is indicated thereon as the agent of a tax-exempt entity. **No exemption certificate issued by the Colorado Department of Revenue or any other taxing authority shall be recognized as a basis for exemption from sales or use taxes.**

Estimated use tax must be remitted to the City of Boulder prior to the start of the project. The tax is computed on the full contract price of the project. Follow these steps to compute and remit the sales/use tax to the City:

1. Multiply the full contract price by 0.5 and then multiply the resulting product by the tax rate of 3.41% (0.0341). This is the tax that is due to the City prior to the start of the project.
2. Remit the tax to the Sales Tax Department at 1777 Broadway, P.O. Box 791, Boulder, CO 80306-0791 along with a copy of this completed form.
3. At the completion of the project the construction company has two options for closing out the project with the city.
 - Use the formula in (1.) above to compute the final tax due based on the final contract price (including all change orders). Remit the additional tax due or file a request for refund with the City; or
 - Request that the city perform a full audit. Contact Ed Kaiser at 303-441-3921 or kaisere@bouldercolorado.gov to inform the City of which option you have chosen.

Contractor Name: _____
 Address: _____
 Phone #: _____ Contact Person: _____
 Project Name: _____
 Project Address: _____

Full Contract price	A. _____
Multiply 'A' by 0.5	B. _____
Multiply 'B' by 0.0341	C. _____

"C" is the amount of tax due to the City of Boulder. If you have any questions regarding sales/use tax or this process, contact Ed Kaiser at the above phone number or address.

Date received: _____ City Authority Signature: _____

10102



University of Colorado at Boulder

***CONTRACTOR'S
STATEMENT OF EXPERIENCE***

Project Name: EVNT: Main Event Area – Install Video Boards

Project No. PR 004877

Project Manager: Lonnie Greim
Phone: 303-440-0212
Email: Lonnie.greim@colorado.edu

Architect/Engineer: Sink Combs Dethlefs, P.C.

Contact: Steve King
303-308-0200
Email address: king@sinkcombs.com

This is a project specific qualification form. Contractor must fill this out on each project.

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**UNIVERSITY OF COLORADO AT BOULDER
CONTRACTOR'S QUALIFICATION STATEMENT**

INFORMATION FORM

STATEMENT OF _____
(Contractor)

ADDRESS _____
(Street or PO Box) (City) (State) (Zip)

TELEPHONE/FAX NO. _____
(telephone) (fax)

DATE OF EXPERIENCE STATEMENT _____

PRINCIPLE OWNER/OFFICER _____
(Names(s) and Official Title(s))

Please indicate below if your company qualifies as one of the following:

Minority Business Enterprise (MBE) YES ___ NO ___

Justification: _____

Woman-Owned Business Enterprise (WBE) YES ___ NO ___

Justification: _____

Small Business Enterprise (SBE) YES ___ NO ___

Justification: _____

Disadvantaged Business Enterprise (DBE) YES ___ NO ___

Justification: _____

**UNIVERSITY OF COLORADO AT BOULDER
CONTRACTOR'S QUALIFICATION STATEMENT**

TYPES OF WORK

- (1) If you are a General Contractor interested in bidding on all types of construction, mark "All Classes of Construction" only.
- (2) If you are interested in contracting directly with the University for certain types of work only, mark in the column provided after the particular types of work on which you wish to bid.

TYPES OF WORK	MARK WITH (X)
1. All Classes of Construction	
2. General	
3. Mechanical	
4. Electrical	
5. Excavating and Grading	
6. Concrete	
7. Structural Steel	
8. Steel and Miscellaneous Iron	
9. Painting and Decorating	
10. Laboratory Equipment	
11. Elevator Installation	
12. Plumbing	
13. Heating and Ventilating	
14. Air Conditioning	
15. Boiler and Equipment	
16. Environmental (Describe)	
17. Other (Describe)	
18. Other (Describe)	
19. Other (Describe)	
20. Other (Describe)	

**UNIVERSITY OF COLORADO AT BOULDER
CONTRACTOR'S QUALIFICATION STATEMENT**

IDENTIFICATION

(The signatory of this questionnaire guarantees the truth and accuracy of all statements and of all answers to questions hereinafter made.)

LEGAL NAME _____

PRINCIPAL OFFICE _____
(Street or PO Box) (City) (State) (Zip)

_____ A Corporation _____ A Copartnership _____ An Individual ___ Combination

GENERAL INFORMATION

A. Are you licensed as a contractor? Yes () No ()

Licensed in the name of	Location (City or State)	License No. & Type
----------------------------	-----------------------------	-----------------------

B. How many years has your organization been in business as a contractor under your present business name? _____

C. How many years experience in _____ construction work has your organization had? (Type)

(a) As a prime contractor? _____ (b) As a subcontractor?

D. Have you or your organization, or any officer or partner thereof, failed to complete a contract? _____

If so, give details _____

E. If you have a controlling interest in any firms presently qualified with the University, show names thereof:

F. We normally perform _____% of the work with our own forces.

List trades: _____

Where qualification is based on a combination of several organizations, show the experience and equipment of the combined organizations.

G. Has your firm been involved in any litigation in the past five (5) years? Yes () No ()
If yes, explain (listing type, kind, plaintiff, defendant, etc. and state the current status).

H. Are there any activities or interests of officers, principle stockholders, or employees of your firm or other factors which would place your firm and the University of Colorado at Boulder in a position of "Conflict of Interests"?

Yes () No () If yes, or in doubt, explain.

I. Has your firm ever been involved in any bankruptcy action as a bankrupt?

Yes () No () If yes, explain.

**UNIVERSITY OF COLORADO AT BOULDER
CONTRACTOR'S QUALIFICATION STATEMENT**

PERSONNEL OF ORGANIZATION

1. Name the persons with whom you have been associated in business as partners or business associates in each of the last five (5) years.

2. Show the construction experience of the principal individuals of your present organization in the following tabulation:

Individual's Name	Present Position or Office in Your Organization	Years of Construction Experience	Magnitudes and Type of Work	In What Capacity

**UNIVERSITY OF COLORADO AT BOULDER
CONTRACTOR'S QUALIFICATION STATEMENT**

PROJECT EXPERIENCE

Show the projects your organization has completed during the last five years in the following tabulation:

Year Completed	Project	Type of Work (See Page 2)	Location	Contract Value	Contracting Authority	In what Capacity

**UNIVERSITY OF COLORADO AT BOULDER
CONTRACTOR'S QUALIFICATION STATEMENT**

WORK CURRENTLY UNDER CONTRACT

Expected Completion Date	Project	Type of Work (See Page 1)	Location	Contract Value	Contracting Authority	Architect or Engineer

**UNIVERSITY OF COLORADO AT BOULDER
CONTRACTOR'S QUALIFICATION STATEMENT**

SURETIES

List the Surety Companies that have bonded your work for the past five (5) years:

Name of Surety and Name and Address of Agent	Project and Location	Period of Bond From	Period of Bond To	General Comments

**UNIVERSITY OF COLORADO AT BOULDER
CONTRACTOR'S QUALIFICATION STATEMENT**

CORPORATION / CO-PARTNERSHIP

CORPORATION:
(If a corporation, answer this:)

When Incorporated _____

In What State _____

President's Name _____

Vice President's Name _____

Secretary's Name _____

Treasurer's Name _____

CO-PARTNERSHIP:
(If a co-partnership, answer this:)

Date of Organization _____

State whether partnership is general, limited, or association

Name and address of each partner:

(name)

(name)

(address)

(address)

WHERE QUALIFICATION IS BASED ON A COMBINATION OF ORGANIZATIONS, THE APPROPRIATE (ATTACHED) AFFIDAVITS MUST BE EXECUTED FOR EACH MEMBER OF SUCH COMBINATION.

**UNIVERSITY OF COLORADO AT BOULDER
CONTRACTOR'S QUALIFICATION STATEMENT**

AFFIDAVIT FOR CORPORATION

_____certifies and says: That he is
(Name of officer)

_____of the _____
(Official capacity)

corporation submitting this statement of experience: that he/she has read the same, and that the same is true of his/her own knowledge: that the statement is for the purpose of inducing the University of Colorado to supply the submitter with plans and specifications, and that any vendor, or other agency therein named is hereby authorized to supply the University of Colorado with any information necessary to verify the statement: and that furthermore, should this statement at any time cease to properly and truly represent his/her condition in any substantial respect, it will refrain from further bidding on University work until it shall have submitted a revised and corrected statement.

I certify and declare under penalty of perjury that the foregoing is true and correct:

Subscribed on _____ at _____, _____, State of _____
(date) (city) (county)

NOTE: Use full corporate name and
attach corporate seal here. _____
(Officer must sign here)

NOTE: Statement will be returned unless affidavit is completed in EVERY respect.

**UNIVERSITY OF COLORADO AT BOULDER
CONTRACTOR'S QUALIFICATION STATEMENT**

AFFIDAVIT FOR CO-PARTNERSHIP

_____ certifies and says: That he/she is a
partner of _____
(Name of partner)

the partnership of _____: That said partnership
(Name of Firm)

submitted this statement of experience: that he/she has read the same, and that the same is true of his/her own knowledge: that the statement is for the purpose of inducing the University of Colorado to supply the submitter with plans and specifications, and that any vendor, or other agency therein named is hereby authorized to supply the University of Colorado with any information necessary to verify the statement: and that furthermore, should this statement at any time cease to properly and truly represent the condition of said firm in any substantial respect, it will refrain from further bidding on University work until they shall have submitted a revised and corrected statement.

I certify and declare under penalty of perjury that the foregoing is true and correct:

Subscribed on _____ at _____, _____, State of _____
(date) (city) (county)

The foregoing statement and affidavit are hereby offered.

(Member of Firm must sign here)

(Title)

(Remaining members of Firm sign here) (Name of Firm)

NOTE: Statement will be returned unless affidavit is completed in EVERY respect.

**UNIVERSITY OF COLORADO AT BOULDER
CONTRACTOR'S QUALIFICATION STATEMENT**

AFFIDAVIT FOR INDIVIDUAL

_____ doing business _____
(Name of individual) (Name of Firm)

certifies and says: That he/she is the person submitting this statement of experience: that he/she has read the same, and that the same is true of his/her own knowledge: that the statement is for the purpose of inducing the University of Colorado to supply the submitter with plans and specifications, and that any vendor, or other agency therein named is hereby authorized to supply the University of Colorado with any information necessary to verify the statement: and that furthermore, should this statement at any time cease to properly and truly represent his/her condition in any substantial respect, it will refrain from further bidding on University work until it shall have submitted a revised and corrected statement.

I certify and declare under penalty of perjury that the foregoing is true and correct:

Subscribed on _____ at _____, _____, State of _____
(date) (city) (county)

NOTE: Statement will be returned unless affidavit is completed in EVERY respect. _____
(Applicant must sign here)

**UNIVERSITY OF COLORADO AT BOULDER
CONTRACTOR'S QUALIFICATION STATEMENT**

BIDDING INFORMATION

QUALIFICATION

The University of Colorado will qualify or disqualify a Contractor on the basis of:

- (1) The information contained in this statement and
- (2) Past contract experience with the University.

NOTIFICATION

The University of Colorado will, in writing, notify Contractors of their qualification or disqualification.



STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAMS

BID

Institution/Agency: University of Colorado at Boulder

Project No./Name: PR 004877 – EVNT: Main Event Area – Install Video Boards

Bidder Acknowledges Receipt of Addenda No.s:

Base Bid

(Refer to Bid Alternate Form SC-6.13.1 Attached, If Applicable)

\$

Bidder's Time of Completion

a. Time Period from Notice to Proceed to Substantial Completion:

95 calendar days

b. Time Period from Substantial completion to Final Acceptance:

14 calendar days

c. Time of Completion of Entire Project (a + b):

109 calendar days

1. **BID:** Pursuant to the advertisement by the State of Colorado dated April 13, 2010 the undersigned bidder hereby proposes to furnish all the labor and materials and to perform all the work required for the complete and prompt execution of everything described or shown in or reasonably implied from the Bidding Documents, including the Drawings and Specifications, for the work and for the base bid indicated above. Bidders should include all taxes that are applicable.
2. **EXAMINATION OF DOCUMENTS AND SITE:** The bidder has carefully examined the Bidding Documents, including the Drawings and Specifications, and has examined the site of the work, so as to make certain of the conditions at the site and to gain a clear understanding of the work to be done.
3. **PARTIES INTERESTED IN BID:** The bidder hereby certifies that the only persons or parties interested in this Bid are those named herein, and that no other bidder or prospective bidder has given any information concerning this Bid.
4. **BID GUARANTEE:** This Bid is accompanied by the required Bid Guarantee. You are authorized to hold said Bid Guarantee for a period of not more than thirty (30) days after the opening of the Bids for the work above indicated, unless the undersigned bidder is awarded the Contract, within said period, in which event the Director, State Buildings and Real Estate Programs, may retain said Bid Guarantee, until the undersigned bidder has executed the required Agreement and furnished the required Performance Bond, Labor and Material Payment Bond, Insurance Policy and Certificates of Insurance.
5. **TIME OF COMPLETION:** The bidder agrees to achieve substantial completion of the entire project within the number of calendar days entered above, and if applicable, further agrees that the period between the date of substantial completion and the date of final acceptance of the entire project will not exceed the number of calendar days noted above. If awarded this work, the bidder agrees to begin work within ten (10) days from the date of the Notice to Proceed subject to Article 46, Time of Completion and Liquidated Damages of The General Conditions of the Contract, and agrees to prosecute the work with due diligence to completion. The bidder represents that Article 54D has been reviewed to determine the type and amount of any liquidated damages that may be specified for this contract.

6. **EXECUTION OF DOCUMENTS:** The bidder understands that if this Bid is accepted, he must execute the required Agreement and furnish the required Performance Bond, Labor and Material Payment Bond, Insurance Policy and Certificates of Insurance within ten (10) days from the date of the Notice of Award, and that the bidder will be required to sign to acknowledge and accept the Contract Documents, including the Drawings and Specifications.
7. **ALTERNATES:** Refer to the Information for Bidders (SC-6.12) for Method of Award for Alternates and use State Form SBO-6.13.1 Bid Alternates form to be submitted with this bid form if alternates are requested by the institution/agency in the solicitation documents.

Submit wage rates (direct labor costs) for prime contractor and subcontractor as requested by the institution/agency in the solicitation documents.

The right is reserved to waive informalities and to reject any and all Bids.

	Dated this _____ Day of _____, 2010.
(Corporate Seal)	THE BIDDER:

	Company Name

ATTEST	Address (including city, state and zip)
_____	Phone number: _____
Secretary	_____
_____	Signature
Name (Print)	_____
	Name (Print) and Title

	Print Email address: _____

SIGNATURES: If the Bid is being submitted by a Corporation, the Bid should be signed by an officer, i.e., President or Vice-President. The signature of the officer shall be attested to by the Secretary and properly sealed. If a sole proprietorship or a partnership is submitting the Bid, the Bid shall so indicate and be properly signed.



STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAMS

MINORITY/WOMEN BUSINESS ENTERPRISE PARTICIPATION REPORT

Institution/Agency: University of Colorado at Boulder

Project No./Name: PR 004877 – EVNT: Main Event Area – Install Video Boards

TO BE ELIGIBLE FOR AWARD OF THIS CONTRACT, EACH CONTRACTOR (INCLUDING ARCHITECT/ENGINEER/CONSULTANT/CONTRACTOR) IS REQUESTED TO COMPLY WITH THESE REQUIREMENTS.

I. The undersigned Architect/Engineer/Consultant/Contractor hereby certifies that the (company) (joint venture) (is) (is not)* a minority enterprise as defined in this report. The undersigned Architect/Engineer/Consultant/Contractor hereby certifies the (company) (joint venture) (is) (is not)* a woman-owned business enterprise as defined. (*Strike out where inapplicable.)

*Persons signing hereby swear and affirm that they are authorized to act on Architect/Engineer/Consultant/Contractor's behalf and acknowledge that the State is relying on their representations to that effect. **Principal is not a recognized title and will not be accepted**

ARCHITECT/ENGINEER/CONSULTANT/CONTRACTOR

Legal Name of Contracting Entity

*Signature

By: _____
Name (print) Title

Date: _____

II. It is the general policy of the State of Colorado to be as inclusive as possible to all member communities when spending taxpayer dollars.

III. REQUIREMENTS

- A. Minority Business Enterprise (MBE) means, for the purpose of this report, a business enterprise at least 51 percent that is owned and controlled by minority group members, or, in the case of a publicly owned business, at least 51 percent of the stock of which is owned and controlled by minority group members. Eligible persons are expected to be engaged full time in the day-to-day operation and management of the business. Minority group members are ethnic minorities including African American, Hispanic American, Native American or Asian/Pacific American.
- B. Women Business Enterprise (WBE) means, for the purpose of this report, a business enterprise of at least 51 percent of which is owned and controlled by a woman or women, or, in the case of a publicly-owned business, at least 51 percent of the stock of which is owned and controlled by women. Women are expected to be engaged full time in the day-to-day operation and management of the business.
- C. The State of Colorado does not have a certification process nor does it require MBE's and WBE's to be certified EXCEPT for certain contracts for highway and bridge construction administered by the Colorado Department of Transportation.
- D. The percentages of minority and women-owned business participation will be determined by dollar value of the work subcontracted to or joint ventured with minority and women-owned firms, as compared to the total dollar value of the bid amount for all work bid under this contract.

- E. Prior to the award of this contract, the contractor will be required to provide to the Principal Representative a list of M/WBE enterprises, stipulating the dollar amount of each subcontract or supplier of materials on page 2 of this Minority and Women Business Enterprises Participation Report.
- F. The contractor will retain records and documents showing the level of participation for two years following completion of this contract. These records and documents, or copies thereof, will be made available at reasonable times and places for inspection by an authorized representative of the Principal Representative, or its designated representatives, and will be submitted to such representatives upon written request.

MBE: Yes No WBE: Yes No

Total Contract Amount: \$ _____

Name and Address of M/WBE Subcontractors and/or Suppliers and/or Self-Performed Work by M/WBE Primes*	MBE Contract Amounts	WBE Contract Amounts	Type of Work

*Indicate ethnicity based on Paragraph III. A. above.

Total MBE Contracts: \$ _____
 Total WBE Contracts: \$ _____
 Total MBE %: _____
 Total WBE %: _____



STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAMS

BID BOND

Institution/Agency: University of Colorado at Boulder

Project No./Name: PR 004877 – EVNT: Main Event Area – Install Video Boards

KNOW ALL MEN BY THESE PRESENTS:

WHEREAS, _____ hereinafter called the "PRINCIPAL", is submitting a PROPOSAL for the above described project, to the STATE OF COLORADO, hereinafter called the "OBLIGEE".

WHEREAS, the Advertisement for Bids has required as a condition of receiving the Proposals that the Principal submit with the PROPOSAL GUARANTY in an amount not less than five per cent (5%) of the Proposal, which sum it is specifically agreed is to be forfeited as Liquidated Damages in the event that the Principal defaults in his obligation as hereinafter specified, and, in pursuance of which Requirement, this Bid is made, executed and delivered.

NOW THEREFORE, the Principal and _____ a corporation of the State of _____, duly authorized to transact business in Colorado, as Surety, are held and firmly bound unto the Obligee, in the sum of five per cent (5%) of the Principal's total bid price, lawful money of the United States for the payment of which sum, well and truly to be made to the Obligee, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

FURTHER THAT, a condition of the obligation that the Principal shall maintain his Proposal in full force and effect for thirty (30) days after the opening of the proposals for the project, or, if the Principal's Proposal is accepted, the Principal shall, within the prescribed time, execute the required Agreement, furnish the required Performance Bond, Labor and Material Payment Bond, Insurance Policy, and Certificates of Insurance, then this obligation shall be null and void, otherwise it shall remain in full force and effect, and subject to forfeiture upon demand as Liquidated Damages.

IN WITNESS WHEREOF said Principal and Surety have executed this Bond, this _____ day of _____, A.D., 2010.

(Corporate Seal)

THE PRINCIPAL

ATTEST

Company Name

Secretary

Address (including city, state and zip)

Phone number:

Name (Print)

Signature

Name (Print) and Title

SIGNATURES

If the "Principal" is doing business as a Corporation, the Bid Bond shall be signed by an officer, i.e., President or Vice President. The signature of the officer shall be attested to by the Secretary and properly sealed.

If the "Principal" is an individual or a partnership, the Bid Bond shall so indicate and be properly signed.

(Corporate Seal)

THE SURETY

By

Secretary

Attorney-in-Fact

**THIS BOND MUST BE ACCOMPANIED BY POWER OF ATTORNEY, EFFECTIVELY DATED.
FAILURE TO PROVIDE A PROPERLY EXECUTED BID BOND WITH A PROPERLY EXECUTED POWER OF
ATTORNEY WILL RESULT IN THE BIDDER'S PROPOSAL BEING DEEMED NON-RESPONSIVE.**



STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAMS

NOTICE OF AWARD

Date of Notice: _____
Date to be inserted by the Principal Representative

Institution/Agency: University of Colorado at Boulder

Project No./Name: PR 004877 – EVNT: Main Event Area – Install Video Boards

TO:

The State of Colorado, represented by the undersigned, has considered the Proposals submitted for the above described work.

Your Proposal, deemed to be in the best interest of the State of Colorado, in the amount of and no/100 Dollars (\$ _____ .00*) is hereby accepted, pending final execution of the Agreement.

Base Bid	\$	_____
Add Alternate No. 1	\$	_____
Total Contract Amount \$		_____ *

You **are** required to execute the approved Agreement and to furnish the Performance Bond, Labor and Material Payment Bond, Insurance Policy and Certificates of Insurance within ten (10) days from the date of this Notice.

If you fail to execute said Agreement and to furnish said Performance Bond, Labor and Material Payment Bond, Insurance Policy and Certificates of Insurance within ten (10) days from the date of this Notice, the State Controller will be entitled to retain the amount of the Proposal Guaranty submitted with your Proposal as Liquidated Damages. In this event, the right is reserved to consider all of your rights arising out of the acceptance of your Proposal as abandoned and to award the work covered by your Proposal to another, or to re-advertise the work, or otherwise dispose thereof.

By _____ / Date
Paul M. Leef, AIA, LEED™ AP
Campus Architect
Director, Planning, Design & Construction
State Buildings Programs
(of Authorized Delegate)

By _____ / Date
Ronald L. Ried, Director
Facilities Management Business Services
Principal Representative
(Institution or Agency)

When completely executed, this form is to be sent by **certified mail** to the Contractor by the Principal Representative.

**STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAMS
University of Colorado at Boulder**



**CONTRACTOR'S AGREEMENT
DESIGN/BID/BUILD *STANDARD FORMAT*
(STATE FORM SC-6.21)**

~~CONTRACT ROUTING NO.~~

~~AGENCY IDENTIFICATION NO.~~

PROJECT NO. **PR 004877**

PROJECT NAME: **EVNT: Main Event Area – Install Video Boards**

PROJECT MANAGER: **Lonnie Greim**

CONTRACTOR:

DATE: **April 2010**

**STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAMS**

**CONTRACTOR'S AGREEMENT
DESIGN/BID/BUILD STANDARD FORMAT
(STATE FORM SC-6.21 Rev. 1/2009)**

PR 004877 – EVNT: Main Event Area – Install Video Boards

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**Signed Notice of Award
GC Agreement**

Exhibits:

- A** Contractor's Bid (Form SC-6.13)
- B** Performance Bond (Form SC-6.22)
- C** Labor and Material Payment Bond (Form SC-6.221)
- D** Insurance Certificates
- E** Minority and Women Business Enterprises Participation Report (MWBE-1)
- F** Certification and Affidavit Regarding Unauthorized Immigrants (required at contract signing prior to commencing work)
- G** ~~Sole Source Government Contracts (if applicable)~~
- H** Contract Management Information Construction Contractor – Performance Evaluation Report (if applicable)

STATE OF COLORADO / University of Colorado at Boulder
CONTRACTOR'S AGREEMENT DESIGN/BID/BUILD STANDARD FORMAT

(STATE FORM SC-6.21)

Agency I.D. No. _____ Contract ID No. _____

Project No. PR 004877

EVNT: Main Event Area – Install Video Boards

1. PARTIES. THIS AGREEMENT is entered into by and between the STATE OF COLORADO, acting by and through the Regents of the University of Colorado, a body corporate, hereinafter called the Principal Representative, and (vendor name) having its offices at (vendor address) hereinafter referred to as the Contractor.

2. EFFECTIVE DATE AND NOTICE OF NONLIABILITY. This Agreement shall not be effective or enforceable until it is approved and signed by the State Controller or its designee (hereinafter called the "Effective Date"), but shall be effective and enforceable thereafter in accordance with its provisions. The State shall not be liable to pay or reimburse Construction Manager for any performance hereunder or be bound by any provision hereof prior to the Effective Date.

WHEREAS, the Principal Representative intends to install video boards in the main event area in Coors Events Center, hereinafter called the Project; and

WHEREAS, authority exists in Law and Funds have been budgeted, appropriated, and otherwise made available, and a sufficient unencumbered balance thereof remains available for payment in Fund Number 410, Speed Type / Account Number, 17100004-515192; Contract Encumbrance Number TBD,

WITNESSETH, that the State of Colorado and the Contractor agree as follows:

ARTICLE 1. PERFORMANCE OF THE WORK

The Contractor shall furnish all the work, labor and materials, and shall perform, to the satisfaction of the Principal Representative and its Architect/Engineer, all of the work required for the complete and prompt execution of everything described or shown in, or reasonably implied from the Contract Documents, including The General Conditions of the Contract and the Drawings and Specifications for the above Project.

ARTICLE 2. PROVISIONS OF THE CONTRACT DOCUMENTS

The Contractor agrees to do the work in a first class, substantial and workmanlike manner to the satisfaction of the State of Colorado and its Architect/Engineer in strict accordance with the provisions of the Contract Documents, including The General Conditions of the Contract and the Drawings and Specifications.

ARTICLE 3. TIME OF COMPLETION

The Contractor agrees to substantially complete the entire Project within 95 calendar days from the date of the Notice to Proceed, and, if applicable, the Contractor agrees to complete the final punch list and finally complete the Project within 14 calendar days. The Contractor shall prosecute the work with due diligence to completion.

ARTICLE 4. ESSENTIAL CONDITION

Timely completion of the project is an essential condition of this Agreement. The Contractor shall be subject to any liquidated damages described in Article 54D of The General Conditions of the Contract for failure to satisfactorily complete the work within the time periods in Article 3 above.

ARTICLE 5. CONTRACT SUM

The Contractor shall be paid for the performance of this Agreement, subject to any additions and deductions as provided for in Articles 32, 34 and 35 of The General Conditions of the Contract, the sum of **Thousand, Hundred and no/100 Dollars (\$*)**.

Base Bid	\$
Add Alternate No. 1	\$
Total Contract Amount	\$

ARTICLE 6. CONTRACT DOCUMENTS

The Contract Documents, as enumerated in Article 1 of The General Conditions of the Contract, are all essential parts of this Agreement and are fully incorporated herein.

ARTICLE 7. SAFETY and SECURITY - Contractor understands that concern for the safety and well-being of University students and staff is of particular importance to the University. Contractor expressly acknowledges that it is Contractor's duty to take reasonable precautions to protect the University's students and staff. The extent of such precautions will depend on the particular circumstances of the work to be performed. However, to the extent that work to be performed involves security-sensitive functions or security-sensitive areas (e.g. unsupervised access to minors or work involving access to security-sensitive data), such precautions may include, but are not limited to, conducting criminal history checks on employees or agents assigned to such work at the University."

THE PARTIES HERETO HAVE EXECUTED THIS CONTRACT

*Persons signing for Contractor hereby swear and affirm that they are authorized to act on Contractor's behalf and acknowledge that the State is relying on their representations to that effect. **Principal is not a recognized title and will not be accepted**

THE CONTRACTOR

STATE OF COLORADO, acting by and through:
The Regents of the University of Colorado
A Body Corporate
Ronald L. Ried, Director
Facilities Management Business Services

Legal Name of Contracting Entity

By: _____

Date: _____

*Signature

APPROVED
DEPARTMENT OF PERSONNEL & ADMINISTRATION
STATE BUILDINGS PROGRAMS
State Architect (or authorized Delegate)
Paul M. Leef, AIA, LEED TM AP
Campus Architect & Director, Planning, Design & Construction

By _____
Name (print) Title

Date: _____

By: _____

Date: _____

ALL CONTRACTS MUST BE APPROVED BY THE STATE CONTROLLER:

APPROVED:
STATE OF COLORADO
STATE CONTROLLER'S OFFICE
State Controller (or authorized Delegate)
Steve McNally, Associate Vice Chancellor & Controller

By: _____

Date: _____

APPROVED:
STATE OF COLORADO
ATTORNEY GENERAL
(or authorized Delegate)

By: _____

Date: _____

__ approved by DJ

Rev. 1/2009



STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAMS

PERFORMANCE BOND

Institution/Agency: University of Colorado at Boulder
Project No./Name: PR 004877 – EVNT: Main Event Area – Install Video Boards

BONDING COMPANY: DO NOT MAKE ANY CHANGES TO THE LANGUAGE IN THIS BOND.

KNOW ALL PERSONS BY THESE PRESENTS:

That the Contractor

as Principal and hereinafter called "Principal,"

and

as Surety and hereinafter called "Surety," a corporation organized and existing under the laws of _____
_____ are held and firmly bound unto **the STATE OF COLORADO** acting by and
through the Regents of the University of Colorado, a body corporate, hereinafter called the "Principal
Representative", in the sum of _____

_____ Dollars (\$ _____)

for the payment whereof the Principal and Surety bind themselves, their heirs, executors, administrators,
successors and assigns, jointly and severally, firmly, by these presents.

WHEREAS, the Principal and the State of Colorado acting by and through the Principal Representative have
entered into a certain Contract, hereinafter called "Contract," dated _____, 2010, for
the construction of a PROJECT described as EVNT: Main Event Area – Install Video Boards

which Contract is hereby by reference made a part hereof;

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION, is such that, if the Principal shall promptly, fully and faithfully perform all the undertakings, covenants, terms, conditions and agreements of said Contract during the original term of said Contract any extensions thereof that may be granted by the Principal Representative with or without notice to the Surety, and during the life of any guaranty required under the Contract, and shall also well and truly perform and fulfill all undertakings, covenants, terms, conditions and agreements of any and all duly authorized modifications of said Contract that may hereafter be made, notice of which modifications to the Surety being hereby waived, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

AND THE SAID SURETY, for value received hereby stipulates and agrees that whenever the Principal shall be, and declared by the Principal Representative to be in default under said Contract, the State of Colorado having performed its obligations thereunder, the Surety may promptly remedy the default or shall promptly (1) Complete the Contract in accordance with its terms and conditions, or (2) Obtain a bid or bids for submittal to the Principal Representative for completing the Contract in accordance with its terms and conditions, and upon determination by the Principal Representative and Surety of the lowest responsible bidder, arrange for a contract between such bidder and the State of Colorado acting by and through the Principal Representative and make available as work progresses (even though there should be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion, less the balance of the contract price but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount hereinbefore set forth. The term "balance of the contract price" as herein used shall mean the total amount payable to the Principal under the Contract and any amendments thereto, less the amount properly paid by the State of Colorado to the Contractor.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the State of Colorado.

IN WITNESS WHEREOF said Principal and Surety have executed this Bond, this _____ day of _____, A.D. 2010.

(Corporate Seal)

THE PRINCIPAL

ATTEST:

By: _____

Title: _____

Secretary

(Corporate Seal)

SURETY

By: _____
Attorney-in-fact

THIS BOND MUST BE ACCOMPANIED BY POWER OF ATTORNEY, EFFECTIVELY DATED

Note: This bond is issued simultaneously with another bond conditioned for the full and faithful payment for all labor and material of the contract.



STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAMS

LABOR AND MATERIAL BOND

Institution/Agency: University of Colorado at Boulder

Project

No./Name: PR 004877 – EVNT: Main Event Area – Install Video Boards

BONDING COMPANY: DO NOT MAKE ANY CHANGES TO THE LANGUAGE IN THIS BOND.

KNOW ALL PERSONS BY THESE PRESENTS:

That the Contractor

as Principal and hereinafter called "Principal,"

and

as Surety and hereinafter called "Surety," a corporation organized and existing under the laws of _____ are held and firmly bound unto the STATE OF COLORADO acting by and through The Regents of the University of Colorado, a body corporate, hereinafter called "Principal Representative," and to all subcontractors and any others who have supplied or furnished or shall supply or furnish materials, rental machinery, tools, or equipment actually used in the performance of the hereinafter identified Contract, or who have performed or shall perform labor in the performance of or in connection with said Contract, hereinafter called "Obligees" in the sum of _____

_____ Dollars (\$ _____)

together with interest at the rate of eight per cent (8%) per annum on all payments becoming due in accordance with said Contract, from the time such payments shall become due until such payment shall be made, for the payment of which, well and truly made to the Obligees, the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly, by these presents.

WHEREAS, the Principal and the State of Colorado acting by and through the Principal Representative have entered into a certain Contract, hereinafter called "Contract," dated _____ for the construction of a PROJECT described as **EVNT: Main Event Area – Install Video Boards**

which Contract is hereby by reference made a part hereof;

PR 004877 – EVNT: Main Event Area – Install Video Boards
Labor & Material Payment Bond

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the Principal and the Surety shall fully indemnify and save harmless the State of Colorado and the Principal Representative from and against any and all costs and damages, including patent infringements, which either may suffer by reason of any failure or failures of the Principal promptly and faithfully to perform all terms and conditions of said Contract and shall fully reimburse and repay the State of Colorado and the Principal Representative all outlay and expense which the State of Colorado and the Principal Representative may incur in making good any such failure or failures, and further, if the Principal and his subcontractors shall duly and promptly pay for any and all labor, materials, team hire, sustenance, provisions, provender, rental machinery, tools, or equipment and other supplies which have been or shall be used or consumed by said Principal or his subcontractors in the performance of the work of said Contract, and it said Principal shall duly and promptly pay all his subcontractors the sums due them for any and all materials, rental machinery, tools, or equipment and labor that have been or shall be furnished, supplied, performed or used in connection with performance of said Contract, and shall also fully indemnify and save harmless the State of Colorado and the Principal Representative to the extent of any and all expenditures which either or both of them may be required to make by reason of any failures or defaults by the Principal or any subcontractor in connection with such payments; then this obligation shall be null and void, otherwise it shall remain in full force and effect.

It is expressly understood and agreed that any alterations which may be made in the terms of said Contract or in the work to be done under said Contract, or any extension(s) of time for the performance of the Contract, or any forbearance on the part of either the State of Colorado or the Principal to any of the others, shall not in any way release the Principal and the Surety, or either of them, their heirs, executors, administrators, successors or assigns from their liability hereunder, notice to the Surety of any such alteration, extension or forbearance being hereby waived.

IN WITNESS WHEREOF, the Principal and the Surety have executed this Bond, this _____ day of _____, A.D., 2010.

(Corporate Seal)

THE PRINCIPAL

ATTEST:

By: _____

Title: _____

Secretary

(Corporate Seal)

SURETY

By: _____

Attorney-in-fact

THIS BOND MUST BE ACCOMPANIED BY POWER OF ATTORNEY, EFFECTIVELY DATED

Note: This bond is issued simultaneously with another bond conditioned for the full and faithful performance of the contract.

**STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAMS**



**THE GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT
DESIGN/BID/BUILD *STANDARD FORMAT*
(STATE FORM SC-6.23)**

Project Name: **EVNT: Main Event Area – Install Video Boards**

Project No. **PR 004877**

Project Manager: **Lonnie Greim**

Date: **April 2010**

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Note: The sections of the General Conditions indicated in *italics* (Articles 35 General and 35A, 35B, 37, 38, 46, 48B, 49 and 50) are regulatory and cannot be modified except through appropriate rule making procedures through the Division of Finance and Procurement, Department of Personnel & Administration.



General Conditions of Contract

ARTICLE 1. DEFINITIONS

A. CONTRACT DOCUMENTS

The Contract Documents consist of:

1. Agreement; (SC-6.21);
2. Performance Bond (SC-6.22) and Labor and Material Payment Bond (SC-6.221);
3. General and Supplementary General Conditions of the Contract (SC-6.23);
4. Detailed Specification Requirements, including all addenda issued prior to the opening of the bids; and,
5. Drawings, including all addenda issued prior to the opening of the bids.
6. Change Orders (SC-6.31) and Amendments (SC-6.0), if any, when properly executed.

B. PROCEDURAL DOCUMENTS

The Procedural Documents used in the administration and performance of the Agreement consist of:

1. Authorization to Bid (SBP-6.10)
2. Information for Bidders (SBP-6.12);
3. Bid (SBP-6.13);
4. Bid Bond (SBP-6.14);
5. Notice of Award (SBP-6.15);
6. Builder's risk insurance certificates of insurance (ACORD 25-S);
7. Liability and workers' compensation certificates of insurance;
8. Notice to Proceed (Design/Bid/Build) (SBP-6.26);
9. Notice of Approval of Occupancy/Use (SBP-01);
10. Notice of Partial Substantial Completion (SBP-071);
11. Notice of Substantial Completion (SBP-07);
12. Notice of Partial Final Acceptance (SC-6.27);
13. Notice of Final Acceptance (SBP-6.271);
14. Notice of Partial Contractor's Settlement (SC-7.3);
15. Notice of Contractor's Settlement (SBP-7.31);
16. Application and Certificate for Contractor's Payment (SBP-7.2);
17. Other procedural and reporting documents or forms referred to in the General Conditions, the Supplementary General Conditions, the Specifications or required by the State Buildings Programs or the Principal Representative, including but not necessarily limited to Pre-Acceptance Check List (SBP-05) and Pre-Acceptance Punch List (SBP-06), and the Building Inspection Record (SBP-BIR). A list of the current standard State Buildings Programs forms applicable to this Contract may be obtained from the Principal Representative on request.

C. DEFINITIONS OF WORDS AND TERMS USED

1. AGREEMENT. The term "Agreement" shall mean the written agreement entered into by the State of Colorado acting by and through the Principal Representative and the Contractor for the performance of the Work and payment therefore, on State Form SC-6.21. The term Agreement when used without reference to State Form SC-6.21 may also refer to the entirety

- of the parties' agreement to perform the Work described in the Contract Documents or reasonably inferable there from. The term "Contract" shall be interchangeable with this latter meaning of the term Agreement
2. ARCHITECT/ENGINEER. The term "Architect/Engineer" shall mean either the architect of record or the engineer of record under contract to the State of Colorado for the Project identified in the Contract Documents.
 3. OCCUPANCY. The term "Occupancy" means occupancy taken by the State as Owner after the Date of Substantial Completion at a time when a building or other discrete physical portion of the Project is used for the purpose intended. The Date of Occupancy shall be the date of such first use, but shall not be prior to the date of execution of the Notice of Approval of Occupancy/Use. Prior to the date of execution of a Notice of Approval of Occupancy/Use, the state shall have no right to occupy and the project may not be considered safe for occupancy for the intended use.
 4. CHANGE ORDER. The term "Change Order" means a written order, signed by a Procurement Officer, directing the Contractor to make changes in the Work, in accordance with Article 35A, The Value of Changed Work.
 5. COLORADO LABOR. The term "Colorado labor" shall be defined, as provided in § 8-17-101, C.R.S., as any person who is a resident of the state of Colorado, at the time of employment, without discrimination as to race, color, creed, sex, age, or religion except when sex or age is a bona fide occupational qualification, or shall have such other meaning as the term may otherwise be given in § 8-17-101, C.R.S., as amended.
 6. CONTRACTOR. The word "Contractor" shall mean the person, company, firm, corporation or other legal entity entering into a contract with the State of Colorado acting by and through the Principal Representative
 7. DAYS. The term "days" whether singular or plural shall mean calendar days unless expressly stated otherwise. Where the term "business days" is used it shall mean business days of the State of Colorado.
 8. DRAWINGS. The term "Drawings" shall mean all drawings approved by appropriate State officials which have been prepared by the Architect/Engineer showing the work to be done, except that where a list of drawings is specifically enumerated in the Supplementary General Conditions or division 1 of the Specifications, the term shall mean the drawings so enumerated, including all addenda drawings.
 9. EMERGENCY FIELD CHANGE ORDER. The term "Emergency Field Change Order" shall mean a written change order for extra work or a change in the work necessitated by an emergency as defined in Article 35C executed on State form SC 6.31 and identified as an Emergency Field Change Order. The use of such orders is limited to emergencies and to the amounts shown in Article 35C.
 10. FINAL ACCEPTANCE. The terms "final acceptance" or "finally complete" mean the stage in the progress of the work, after substantial completion, when all remaining items of work have been completed, all requirements of the Contract Documents are satisfied and the Notice of Acceptance can be issued. Discrete physical portions of the Project may be separately and partially deemed finally complete at the discretion of the Principal Representative when that portion of the Project reaches such stage of completion and a partial Notice of Acceptance can be issued.
 11. NOTICE. The term "Notice" shall mean any communication in writing from either contracting party to the other by such means of delivery that receipt cannot properly be denied. Notice shall be provided to the person identified to receive it in Article 54E, Notice Identification, or to such other person as either party identifies in writing to receive Notice. Notice by facsimile transmission where proper transmission is evidence shall be adequate where facsimile numbers are included in Article 54E. Notwithstanding an email delivery or return receipt, email Notice shall not be adequate. Acknowledgment of receipt of a voice message shall not be deemed to waive the requirement that Notice, where required, shall be in writing.

12. OWNER. The term "Owner" shall mean the Principal Representative.
13. PRINCIPAL REPRESENTATIVE. The term "Principal Representative " shall be defined, as provided in § 24-30-1301(11), C.R.S., as the governing board of a state department, institution, or agency; or if there is no governing board, then the executive head of a state department, institution, or agency, as designated by the governor or the general assembly and as specifically identified in the Contract Documents, or shall have such other meaning as the term may otherwise be given in § 24-30-1301(11), C.R.S., as amended. The Principal Representative may delegate authority. The Contractor shall have the right to inquire regarding the delegated authority of any of the Principal Representative's representatives on the project and shall be provided with a response in writing when requested.
14. PROCUREMENT OFFICER. The term "Procurement Officer " means any person duly authorized to enter into and administer contracts and make written determinations with respect thereto. "Procurement Officer" includes an authorized representative of the Principal Representative acting within the limits of his or her authority.
15. PRODUCT DATA. The term "Product Data " shall mean all submittals in the form of printed manufacturer's literature, manufacturer's specifications, and catalog cuts.
16. REASONABLY INFERABLE: The phrase "reasonably inferable" means that if an item or system is either shown or specified, all material and equipment normally furnished with such items or systems and needed to make a complete installation shall be provided whether mentioned or not, omitting only such parts as are specifically excepted, and shall include only components which the Contractor could reasonably anticipate based on his or her skill and knowledge using an objective, industry standard, not a subjective standard. This term takes into consideration the normal understanding that not every detail is to be given on the Drawings and Specifications. The phrase shall not, however, be construed to make the Contractor, rather than the Architect/Engineer, responsible for producing the Drawings and Specifications
17. SAMPLES. The term "Samples" shall mean examples of materials or work provided to establish the standard by which the Work will be judged.
18. SC. The term "SC" means "State Contract" which is used in connection with labeling applicable State form documents (e.g. "SC 6.23" is the State form number for these General Conditions of the Contract).
19. SBP. The term "SBP" means "State Buildings", which is used in connection with labeling applicable State form documents (e.g., "SBP-01" is the form number for Notice of Approval of Occupancy/Use).
20. SHOP DRAWINGS. The term "Shop Drawings " shall mean any and all detailed drawings prepared and submitted by Contractor, Subcontractor at any tier, vendors or manufacturers providing the products and equipment specified on the Drawings or called for in the Specifications.
21. SPECIFICATIONS. The term "Specifications " shall mean the requirements of divisions 1 through 17 of the project manual prepared by the Architect/Engineer describing the work to be accomplished.
22. STATE BUILDINGS PROGRAMS. The term "State Buildings Programs" is the shortened name of the division of State Buildings Programs. It shall refer to the division of the executive department of State government responsible for project administration, review, approval and coordination of plans, construction procurement policy, contractual procedures, and code compliance and inspection of all buildings, public works and improvements erected for state purposes; except public roads and highways and projects under the supervision of the division of wildlife and the division of parks and outdoor recreation as provided in § 24-30-1301, *et seq*, C.R.S. The term State Buildings Programs shall also mean that individual within a State Department agency or institution, including institutions of higher education, who has signed an agreement accepting delegation to perform all or part of the responsibilities and functions of State Buildings Programs.
23. SUBMITTALS. The term "submittals" means drawings, lists, tables, documents and samples prepared by the Contractor to facilitate the progress of the work as required by these General Conditions or the Drawings and Specifications. They consist of Shop Drawings, Product Data, Samples, and various administrative support documents including but not limited to lists of subcontractors, construction progress schedules, schedules of values, applications for

payment, inspection and test results, requests for information, various document logs, and as-built drawings. Submittals are required by the Contract Documents, but except to the extent expressly specified otherwise are not themselves a part of the Contract Documents.

24. **SUBSTANTIAL COMPLETION.** The terms "substantial completion " or "substantially complete " mean the stage in the progress of the work when the construction is sufficiently complete, in accordance with the Contract Documents as modified by any Change Orders, so that the Work, or at the discretion of the Principal Representative, any designated portion thereof, is available for its intended use by the Principal Representative and a Notice of Substantial Completion can be issued. Portions of the Project may, at the discretion of the Principal Representative, be designated as substantially complete.
25. **SURETY.** The term "Surety " shall mean the company providing the labor and material payment and performance bonds for the Contractor as obligor.
26. **WORK.** The term "Work " shall mean all or part of the labor, materials, equipment, and other services required by the Contract Documents or otherwise required to be provided by the Contractor to meet the Contractor's obligations under the Contract.

ARTICLE 2. EXECUTION, CORRELATION, INTENT OF DOCUMENTS, COMMUNICATION AND COOPERATION

A. EXECUTION

The Contractor, within ten (10) days from the date of Notice of Award, will be required to:

1. Execute the Agreement, State Form SC-6.21;
2. Furnish fully executed Performance and Labor and Material Payment Bonds on State Form s SC-6.22 and SC-6.221; and
3. Furnish certificates of insurance evidencing all required insurance on standard Acord forms designed for such purpose.
4. Furnish certified copies of any insurance policies requested by the Principal Representative.

B. CORRELATION

By execution of the Agreement the Contractor represents that the Contractor has visited the site, has become familiar with local conditions and local requirements under which the Work is to be performed, including the building code programs of the State Buildings Program as implemented by the Principal Representative, and has correlated personal observations with the requirements of the Contract Documents.

C. INTENT OF DOCUMENTS

The Contract Documents are complementary, and what is called for by any one document shall be as binding as if called for by all. The intention of the documents is to include all labor, materials, equipment and transportation necessary for the proper execution of the Work. Words describing materials or work which have a well-known technical or trade meaning shall be held to refer to such recognized standards.

In any event, if any error exists, or appears to exist, in the requirements of the Drawings or Specifications, or if any disagreement exists as to such requirements, the Contractor shall have the same explained or adjusted by the Architect/Engineer before proceeding with the work in question. In the event of the Contractor's failure to give prior written Notice of any such errors or disagreements of which the Contractor or the Subcontractors at any tier are aware, the Contractor shall, at no additional cost to the Principal Representative, make good any damage to, or defect in, work which is caused by such omission.

Where a conflict occurs between or within standards, Specifications or Drawings, which is not resolved by reference to the precedence between the Contract Documents, the more stringent or higher quality requirements shall apply so long as such more stringent or higher quality requirements are reasonably inferable. The Architect/Engineer shall decide which requirements will provide the best installation.

With the exception noted in the following paragraph, the precedence of the Contract Documents is in the following sequence:

1. The Agreement (SC-6.21);
2. The Supplementary General Conditions, if any;
3. The General Conditions (SC-6.23); and
4. Drawings and Specifications, all as modified by any addenda.

Change Orders and Amendments, if any, to the Contract Documents take precedence over the original Contract Documents.

Notwithstanding the foregoing order of precedence, the Special Provisions of Article 52 of the General Conditions, Special Provisions, shall take precedence, rule and control over all other provisions of the Contract Documents.

Unless the context otherwise requires, form numbers in this document are for convenience only. In the event of any conflict between the form required by name or context and the form required by number, the form required by name or context shall control. The Contractor may obtain State forms from the Principal Representative upon request.

D. PARTNERING, COMMUNICATIONS AND COOPERATION

In recognition of the fact that conflicts, disagreements and disputes often arise during the performance of construction contracts, the Contractor and the Principal Representative aspire to encourage a relationship of open communication and cooperation between the employees and personnel of both, in which the objectives of the Contract may be better achieved and issues resolved in a more fully informed atmosphere.

The Contractor and the Principal Representative each agree to assign an individual who shall be fully authorized to negotiate and implement a voluntary partnering plan for the purpose of facilitating open communications between them. Within thirty days (30) of the Notice to Proceed, the assigned individuals shall meet to discuss development of an informal agreement to accomplish these goals.

The assigned individuals shall endeavor to reach an informal agreement, but shall have no such obligation. Any plans these parties voluntarily agree to implement shall result in no change to the contract amount, and no costs associated with such plan or its development shall be recoverable under any contract clause. In addition, no plan developed to facilitate open communication and cooperation shall alter, amend or waive any of the rights or duties of either party under the Contract unless and except by written Amendment to the Contract, nor shall anything in this clause or any subsequently developed partnering plan be deemed to create fiduciary duties between the parties unless expressly agreed in a written Amendment to the Contract. It is also recognized that projects with relatively low contract values may not justify the expense or special efforts required. In the case of small projects with an initial Contract value under \$500,000, the requirements of the preceding paragraph shall not apply.

ARTICLE 3. COPIES FURNISHED

The Contractor will be furnished, free of charge, the number of copies of Drawings and Specifications as specified in the Contract Documents, or if no number is specified, all copies reasonably necessary for the execution of the work.

ARTICLE 4. OWNERSHIP OF DRAWINGS

Drawings or Specifications, or copies of either, furnished by the Architect/Engineer, are not to be used on any other work. At the completion of the Work, at the written request of the Architect/Engineer, the Contractor shall endeavor to return all Drawings and Specifications.

The Contractor may retain the Contractor's Contract Document set, copies of Drawings and Specifications used to contract with others for any portion of the Work and a marked up set of as-built drawings.

ARTICLE 5. ARCHITECT/ENGINEER'S STATUS

The Architect/Engineer is the representative of the Principal Representative for purposes of administration of the Contract, as provided in the Contract Documents and the Agreement. In case of termination of employment or the death of the Architect/Engineer, the Principal Representative will appoint a capable Architect/Engineer against whom the Contractor makes no reasonable objection, whose status under the Contract shall be the same as that of the former Architect/Engineer.

**ARTICLE 6. ARCHITECT/ENGINEER DECISIONS AND JUDGMENTS,
ACCESS TO WORK AND INSPECTION**

A. DECISIONS

The Architect/Engineer shall, within a reasonable time, make decisions on all matters relating to the execution and progress of the Work or the interpretation of the Contract Documents, and in the exercise of due diligence shall be reasonably available to the Contractor to timely interpret and make decisions with respect to questions relating to the design or concerning the Contract Documents.

B. JUDGMENTS

The Architect/Engineer is, in the first instance, the judge of the performance required by the Contract Documents as it relates to compliance with the Drawings and Specifications and quality of workmanship and materials.

The Architect/Engineer shall make judgments regarding whether directed work is extra or outside the scope of Work required by the Contract Documents at the time such direction is first given. If, in the Contractor's judgment, any performance directed by the Architect/Engineer is not required by the Contract Documents or if the Architect/Engineer does not make the judgment required, it shall be a condition precedent to the filing of any claim for additional cost related to such directed work that the Contractor, before performing such work, shall first obtain in writing, the Architect/Engineer's written decision that such directed work is included in the performance required by the Contract Documents. If the Architect/Engineer's direction to perform the work does not state that the work is within the performance required by the Contract Documents, the Contractor shall, in writing, request the Architect/Engineer to advise in writing whether the directed work will be considered extra work or work included in the performance required by the Contract Documents.

The Architect/Engineer shall respond to any such written request for such a decision within three (3) business days and if no response is provided, or if the Architect/Engineer's written decision is to the effect that the work is included in the performance required by the Contract Documents, the Contractor may file with the Principal Representative and the Architect/Engineer a Notice of claim in accordance with Article 36, Claims. Whether or not a Notice of claim is filed, the Contractor shall proceed with the ordered work. Disagreement with the decision of the Architect/Engineer shall not be grounds for the Contractor to refuse to perform the work directed or to suspend or terminate performance.

C. ACCESS TO WORK

The Architect/Engineer, the Principal Representative and representatives of State Buildings Programs shall at all times have access to the work. The Contractor shall provide proper facilities for such access and for their observations or inspection of the work.

D. INSPECTION

The Architect/Engineer has agreed to make, or that structural, mechanical, electrical engineers or other consultants will make, periodic visits to the site to generally observe the progress and quality of the Work to determine in general if the Work is proceeding in accordance with the Contract Documents. Observation may extend to all or any part of the Work and to the preparation, fabrication or manufacture of materials.

Without in any way meaning to be exclusive or to limit the responsibilities of the Architect/Engineer or the Contractor, the Architect/Engineer has agreed to observe, among other aspects of the Work, the following for compliance with the Contract Documents:

1. Bearing surfaces of excavations before concrete is placed based upon the findings and recommendations of the Principal Representative's soils engineering consultant;
2. Reinforcing steel after installation and before concrete is poured;
3. Structural concrete;
4. Laboratory reports on all concrete testing based upon the findings and recommendations of the Principal Representative's testing consultant;
5. Structural steel during and after erection and prior to its being covered or enclosed;
6. Steel welding; Principal Representative will furnish steel welding inspection consultant/agency if required or necessary for the project;
7. Mechanical and plumbing work following its installation and prior to its being covered or enclosed;
8. Electrical work following its installation and prior to its being covered or enclosed;
9. Compaction testing reports based upon the findings and recommendations of the Principal Representative's testing consultant; and
10. Any special or quality control testing required in the Contract Documents provided by the Principal Representative's testing consultant.

If the Specifications, the Architect/Engineer's instructions, laws, ordinances of any public authority require any work to be specifically tested or approved, the Contractor shall give the Architect/Engineer timely notice of its readiness for observation by the Architect/Engineer or inspection by another authority, and if the inspection is by another authority, of the date fixed for such inspection, required certificates of inspection being secured by the Contractor. The Contractor shall give all required Notices to the Principal Representative or his or her designee for inspections required for the building inspection program. It shall be the responsibility of the Contractor to determine the Notice required by the State pursuant to Building Inspection Record for the Project, according to State form SBP-B.I.R., or the equivalent form required by the Principal Representative as approved by the State Buildings Program. If any such work is covered up without approval or consent of the Architect/Engineer or prior to any building code inspection, it must, if required by the Architect/Engineer, the Principal Representative or the State Buildings Programs, be uncovered for examination, at the Contractor's expense. If such work is found to be not in accordance with the Contract Documents, the Contractor shall pay such costs, unless he or she shall show that the defect in the work was caused by another contractor engaged by the Principal Representative. In that event, the Principal Representative shall pay such cost. In addition, examination of questioned work may be ordered, and if so ordered, the work must be uncovered by the Contractor. If such work be found in accordance with the Contract Documents, the Contractor shall be reimbursed the cost of examination and replacement.

ARTICLE 7. CONTRACTOR'S SUPERINTENDENCE AND SUPERVISION

The Contractor shall employ, and keep present on the Project during its progress, a competent superintendent and any necessary assistants, all satisfactory to the Architect/Engineer and the Principal Representative. The superintendent shall not be changed except with the consent of the Architect/Engineer and the Principal Representative, unless the superintendent proves to be unsatisfactory to the Contractor and ceases to be in his or her employ. The superintendent shall represent the Contractor in his or her absence and all directions given to the superintendent shall be as binding as if given to the Contractor. Directions received by the superintendent shall be documented by the superintendent and confirmed in writing with the Contractor.

The Contractor shall give efficient supervision to the Work, using his or her best skill and attention. He or she shall carefully study and compare all Drawings, Specifications and other written instructions and shall without delay report any error, inconsistency or omission which he or she may discover in writing to the Architect/Engineer. The Contractor shall not be liable to the Principal Representative for damage to the extent it results from errors or deficiencies in the Contract Documents or other instructions by the Architect/Engineer, unless the Contractor knew or had reason to know, that damage would result by proceeding and the Contractor fails to so advise the Architect/Engineer.

The superintendent shall see that the Work is carried out in accordance with the Contract Documents and in a uniform, thorough and first-class manner in every respect. The Contractor's superintendent shall establish

all lines, levels, and marks necessary to facilitate the operations of all concerned in the Contractor's Work. The Contractor shall lay out all work in a manner satisfactory to the Architect/Engineer, making permanent records of all lines and levels required for excavation, grading, foundations, and for all other parts of the Work.

ARTICLE 8. MATERIALS AND EMPLOYEES

Unless otherwise stipulated, the Contractor shall provide and pay for all materials, labor, water, tools, equipment, light, power, transportation and other facilities necessary for the execution and completion of the Work.

Unless otherwise specified, all materials shall be new and both workmanship and materials shall be first class and of uniform quality. The Contractor shall, if required, furnish satisfactory evidence as to the kind and quality of materials.

The Contractor is fully responsible for all acts and omissions of the Contractor's employees and shall at all times enforce strict discipline and good order among employees on the site. The Contractor shall not employ on the Work any person reasonably deemed unfit by the Principal Representative or anyone not skilled in the work assigned to him.

ARTICLE 9. SURVEYS, PERMITS, LAWS, TAXES AND REGULATIONS

A. SURVEYS

The Principal Representative shall furnish all surveys, property lines and bench marks deemed necessary by the Architect/Engineer, unless otherwise specified.

B. PERMITS AND LICENSES

Permits and licenses necessary for the prosecution of the Work shall be secured and paid for by the Contractor. Unless otherwise specified in the Specifications, no local municipal or county building permit shall be required. However, State Buildings Programs requires each Principal Representative to administer a building code inspection program, the implementation of which may vary at each agency or institution of the State. The Contractors' employees shall become personally familiar with these local conditions and requirements and shall fully comply with such requirements. State electrical and plumbing permits are required, unless the requirement to obtain such permits is altered by State Building's Programs. The Contractor shall obtain and pay for such permits.

Easements for permanent structures or permanent changes in existing facilities shall be secured and paid for by the Principal Representative, unless otherwise specified.

C. TAXES

1. REFUND OF SALES AND USE TAXES

The Contractor shall pay all local taxes required to be paid, including but not necessarily limited to all sales and use taxes. If requested by the Principal Representative prior to issuance of the Notice to Proceed or directed in the Supplementary General Conditions or the Specifications, the Contractor shall maintain records of such payments in respect to the Work, which shall be separate and distinct from all other records maintained by the Contractor, and the Contractor shall furnish such data as may be necessary to enable the State of Colorado, acting by and through the Principal Representative, to obtain any refunds of such taxes which may be available under the laws, ordinances, rules or regulations applicable to such taxes. When so requested or directed, the Contractor shall require Subcontractors at all tiers to pay all local sales and use taxes required to be paid and to maintain records and furnish the Contractor with such data as may be necessary to obtain refunds of the taxes paid by such Subcontractors. No State sales and use taxes are to be paid on material to be used in this Project. On application by the purchaser or seller, the Department of Revenue shall issue to a Contractor or to a Subcontractor at any tier, a certificate or certificates of exemption per § 39-26-114(1)(d), C.R.S., and § 39-26-203, C.R.S.

2. FEDERAL TAXES

The Contractor shall exclude the amount of any applicable federal excise or manufacturers' taxes from the proposal. The Principal Representative will furnish the Contractor, on request exemption certificates.

D. LAWS AND REGULATIONS

The Contractor shall give all notices and comply with all laws, ordinances, rules and regulations bearing on the conduct of the Work as drawn or specified. If the Contractor observes that the Drawings or Specifications require work which is at variance therewith, the Contractor shall without delay notify the Architect/Engineer in writing and any necessary changes shall be adjusted as provided in Article 35, Changes In The Work.

The Contractor shall bear all costs arising from the performance of work required by the Drawings or Specifications that the Contractor knows to be contrary to such laws, ordinances, rules or regulations, if such work is performed without giving Notice to the Architect/Engineer.

ARTICLE 10. PROTECTION OF WORK AND PROPERTY

A. GENERAL PROVISIONS

The Contractor shall continuously maintain adequate protection of all work and materials, protect the property from injury or loss arising in connection with this Contract and adequately protect adjacent property as provided by law and the Contract Documents. The Contractor shall make good any damage, injury or loss, except to the extent:

1. Directly due to errors in the Contract Documents;
2. Caused by agents or employees of the Principal Representative; and,
3. Due to causes beyond the Contractor's control and not to fault or negligence; provided such damage, injury or loss would not be covered by the insurance required to be carried by the Contractor;

B. SAFETY PRECAUTIONS

The Contractor shall take all necessary precautions for the safety of employees on the Project, and shall comply with all applicable provisions of federal, State and municipal safety laws and building codes to prevent accidents or injury to persons on, about or adjacent to the premises where the Work is being performed. He or she shall erect and properly maintain at all times, as required by the conditions and progress of the Work, all necessary safeguards for the protection of workers and the public and shall post danger signs warning against the hazards created by such features of construction as protruding nails, hoists, well holes, elevator hatchways, scaffolding, window openings, stairways and falling materials; and he or she shall designate a responsible member of his or her organization on the Project, whose duty shall be the prevention of accidents. The name and position of any person so designated shall be reported to the Architect/Engineer by the Contractor.

The Contractor shall provide all necessary bracing, shoring and tying of all structures, decks and framing to prevent any structural failure of any material which could result in damage to property or the injury or death of persons; take all precautions to insure that no part of any structure of any description is loaded beyond its carrying capacity with anything that will endanger its safety at any time during the execution of this Contract; and provide for the adequacy and safety of all scaffolding and hoisting equipment. The Contractor shall not permit open fires within the building enclosure. The Contractor shall construct and maintain all necessary temporary drainage and do all pumping necessary to keep excavations and floors, pits and trenches free of water. The Contractor shall be solely responsible for all construction means, methods, techniques, sequences and procedures, and for coordinating all portions of the Work, except as otherwise noted.

The Contractor shall take due precautions when obstructing sidewalks, streets or other public ways in any manner, and shall provide, erect and maintain barricades, temporary walkways, roadways, trench covers, colored lights or danger signals and any other devices necessary or required to assure the safe passage of pedestrians and automobiles.

C. EMERGENCIES

In an emergency affecting the safety of life or of the Work or of adjoining property, the Contractor without special instruction or authorization from the Architect/Engineer or Principal Representative, is hereby permitted to act, at his or her discretion, to prevent such threatened loss or injury; and he or she shall so act, without appeal, if so authorized or instructed. Provided the Contractor has no responsibilities for the emergency, if the Contractor incurs additional cost not otherwise recoverable from insurance or others on account of any such emergency work, the Contract sum shall be equitably adjusted in accordance with Article 35, Changes In The Work.

ARTICLE 11. DRAWINGS AND SPECIFICATIONS ON THE WORK

The Contractor shall keep on the job site one copy of the Contract Documents in good order, including current copies of all Drawings and Specifications for the Work, and any approved Shop Drawings, Product Data or Samples, and as-built drawings. As-built drawings shall be updated weekly by the Contractor and Subcontractors to reflect actual constructed conditions including dimensioned locations of underground work and the Contractor's failure to maintain such updates may be grounds to withhold portions of payments otherwise due in accordance with Article 33, Payments Withheld. All such documents shall be available to the Architect/Engineer and representatives of the State. In addition, the Contractor shall keep on the job site one copy of all approved addenda, Change Orders and requests for information issued for the Work.

The Contractor shall develop procedures to insure the currency and accuracy of as-built drawings and shall maintain on a current basis a log of requests for information and responses thereto, a Shop Drawing and Product Data submittal log, and a Sample submittal log to record the status of all necessary and required submittals.

ARTICLE 12. REQUESTS FOR INFORMATION AND SCHEDULES

A. REQUESTS FOR INFORMATION

The Architect/Engineer shall furnish additional instructions with reasonable promptness, by means of drawings or otherwise, necessary for the proper execution of the Work. All such drawings and instructions shall be consistent with the Contract Documents and reasonably inferable there from. The Architect/Engineer shall determine what additional instructions or drawings are necessary for the proper execution of the Work.

The Work shall be executed in conformity with such instructions and the Contractor shall do no work without proper drawings, specifications or instructions. If the Contractor believes additional instructions, specifications or drawings are needed for the performance of any portion of the Work, the Contractor shall give Notice of such need in writing through a request for information furnished to the Architect/Engineer sufficiently in advance of the need for such additional instructions, specifications or drawings to avoid delay and to allow the Architect/Engineer a reasonable time to respond. The Contractor shall maintain a log of the requests for information and the responses provided.

B. SCHEDULES

1. SUBMITTAL SCHEDULES

Prior to filing the Contractor's first application for payment, a schedule shall be prepared which may be preliminary to the extent required, fixing the dates for the submission and initial review of required Shop Drawings, Product Data and Samples for the beginning of manufacture and installation of materials, and for the completion of the various parts of the Work. It shall be prepared so as to cause no delay in the Work or in the work of any other contractor. The schedule shall be subject to change from time to time in accordance with the progress of the Work, and it shall be subject to the review and approval by the Architect/Engineer. It shall fix the dates at which the various Shop Drawings Product Data and Samples will be required from the Architect/Engineer. The Architect/Engineer, after review and agreement as to the time provided for initial review, shall review and comment on the Shop Drawings, Product Data and Samples in accordance with that schedule. The schedule shall be finalized, prepared and submitted with respect to each of the elements of the Work in time to avoid delay, considering reasonable periods for review, manufacture or installation.

At the time the schedule is prepared, the Contractor, the Architect/Engineer and Principal Representative shall jointly identify the Shop Drawing, Product Data and Samples, if any, which the Principal Representative shall receive simultaneously with the Architect/Engineer for the purposes of owner coordination with existing facility standards and systems. The Contractor shall furnish a copy for the Principal Representative when so requested. Transmittal of Shop Drawings and Product Data copies to the Principal Representative shall be solely for the convenience of the Principal Representative and shall neither create nor imply responsibility or duty of review by the Principal Representative.

The Contractor may also, or at the direction of the Principal Representative at any time shall, prepare and maintain a schedule, which may also be preliminary and subject to change to the extent required, fixing the dates for the initial responses to requests for information or for detail drawings which will be required from the Architect/Engineer to allow the beginning of manufacture, installation of materials and for the completion of the various parts of the Work. The schedule shall be subject to review and approval by the Architect/Engineer. The Architect/Engineer shall, after review and agreement, furnish responses and detail drawings in accordance with that schedule. Any such schedule shall be prepared and approved in time to avoid delay, considering reasonable periods for review, manufacture or installation, but so long as the request for information schedule is being maintained, it shall not be deemed to transfer responsibility to the Contractor for errors or omissions in the Contract Documents where circumstances make timely review and performance impossible.

The Architect/Engineer shall not unreasonably withhold approval of the Contractor's schedules and shall inform the Contractor and the Principal Representative of the basis of any refusal to agree to the Contractor's schedules. The Principal Representative shall attempt to resolve any disagreements.

2. SCHEDULE OF VALUES

Within twenty-one (21) calendar days after the date of the Notice to Proceed, the Contractor shall submit to the Architect/Engineer and Principal Representative, for approval, and to the State Buildings Programs when specifically requested, a complete itemized schedule of the values of the various parts of the Work, as estimated by the Contractor, aggregating the total price. The schedule of values shall be in such detail as the Architect/Engineer or the Principal Representative shall require, prepared on forms acceptable to the Principal Representative. It shall, at a minimum, identify on a separate line each division of the Specifications including the general conditions costs to be charged to the Project. The Contractor shall revise and resubmit the schedule of values for approval when, in the opinion of the Architect/Engineer or the Principal Representative, such resubmittal is required due to changes or modifications to the Contract Documents or the Contract sum.

The total cost of each line item so separately identified shall, when requested by the Architect/Engineer or the Principal Representative, be broken down into reasonable estimates of the value of:

- a. Material, which shall include the cost of material actually built into the Project plus any local sales or use tax paid thereon; and,
- b. Labor and other costs.

The cost of subcontracts shall be incorporated in the Contractor's schedule of values, and when requested by the Architect/Engineer or the Principal Representative, shall be separately shown as line items.

The Architect/Engineer shall review the proposed schedules and approve it after consultation with the Principal Representative, or advise the Contractor of any required revisions within ten (10) days of its receipt. In the event no action is taken on the submittal within ten days, the

Contractor may utilize the schedule of values as its submittal for payment until it is approved or until revisions are requested.

When the Architect/Engineer deems it appropriate to facilitate certification of the amounts due to the Contractor, further breakdown of subcontracts, including breakdown by labor and materials, may be directed.

This schedule of values, when approved, will be used in preparing Contractor's applications for payment on State Form SC-7.2, Application for Payment.

3. **CONSTRUCTION SCHEDULES**

Within twenty-one (21) calendar days after the date of the Notice to Proceed, the Contractor shall submit to the Architect/Engineer and the Principal Representative, and to the State Buildings Programs when specifically requested, on a form acceptable to them, an overall timetable of the construction schedule for the Project. Unless the Supplementary General Conditions or the Specifications allow scheduling with bar charts or other less sophisticated scheduling tools, the Contractor's schedule shall be a critical-path method (CPM) construction schedule. The CPM schedule shall start with the date of the Notice to Proceed and include submittals activities, the various construction activities, change order work (when applicable), close-out, testing, demonstration of equipment operation when called for in the Specifications, and acceptance. The CPM shall at a minimum correlate to the schedule of values line items and shall be cost loaded if requested by the Architect/Engineer or Principal Representative. The completion time shall be the time specified in the Agreement and all Project scheduling shall allocate float utilizing the full period available for construction as specified in the Agreement on State Form SC 6.13, without indication of early completion, unless such earlier completion is approved in writing by the Principal Representative and State Building Programs.

The time shown between the starting and completion dates of the various elements within the construction schedule shall represent one hundred per cent (100%) completion of each element.

All other elements of the CPM schedule shall be as required by the Specifications. In addition, the Contractor shall submit monthly updates of the construction schedule. These updates shall reflect the Contractor's "work in place" progress.

When requested by the Architect/Engineer, the Principal Representative or the State Buildings Programs, the Contractor shall revise the construction schedule to reflect changes in the schedule of values.

When the testing of materials is required by the Specifications, the Contractor shall also prepare and submit to the Architect/Engineer and the Principal Representative a schedule for testing in accordance with Article 14, Samples and Testing.

ARTICLE 13. SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

A. SUBMITTAL PROCESS

The Contractor shall check and field verify all dimensions. The Contractor shall check, approve and submit to the Architect/Engineer in accordance with the schedule described in Article 12, Requests for Information and Schedules, all Shop Drawings, Product Data and Samples required by the specifications or required by the Contractor for the work of the various trades. All Drawings and Product Data shall contain identifying nomenclature and each submittal shall be accompanied by a letter of transmittal identifying in detail all enclosures. The number of copies of Shop Drawings and Product Data to be submitted shall be as specified in the Specifications and if no number is specified then three copies shall be submitted.

The Architect/Engineer shall review and comment on the Shop Drawings and Product Data within the time provided in the agreed upon schedule for conformance with information given and the design

concept expressed in, or reasonably inferred from, the Contract Documents. The nature of all corrections to be made to the Shop Drawings and Product Data, if any, shall be clearly noted, and the submittals shall be returned to the Contractor for such corrections. If a change in the scope of the Work is intended by revisions requested to any Shop Drawings and Product Data, the Contractor shall be requested to prepare a change proposal in accordance with Article 35, Changes In The Work. On resubmitted Shop Drawings, Product Data or Samples, the Contractor shall direct specific attention in writing on the transmittal cover to revisions other than those corrections requested by the Architect/Engineer on any previously checked submittal. The Architect/Engineer shall promptly review and comment on, and return, the resubmitted items.

The Contractor shall thereafter furnish such other copies in the form approved by the Architect/Engineer as may be needed for the prosecution of the work.

B. FABRICATION AND ORDERING

Fabrication shall be started by the Contractor only after receiving approved Shop Drawings from the Architect/Engineer. Materials shall be ordered in accordance with approved Product Data. Work which is improperly fabricated, whether through incorrect Shop Drawings, faulty workmanship or materials, will not be acceptable.

C. DEVIATIONS FROM DRAWINGS OR SPECIFICATIONS

The review and comments of the Architect/Engineer of Shop Drawings, Product Data or Samples shall not relieve the Contractor from responsibility for deviations from the Drawings or Specifications, unless he or she has in writing called the attention of the Architect/Engineer to such deviations at the time of submission, nor shall it relieve the Contractor from responsibility for errors of any sort in Shop Drawings or Product Data. Review and comments on Shop Drawings or Product Data containing identified deviations from the Contract Documents shall not be the basis for a Change Order or a claim based on a change in the scope of the Work unless Notice is given to the Architect/Engineer and Principal Representative of all additional costs, time and other impacts of the identified deviation by bring it to their attention in writing at the time the submittals are made, and any subsequent change in the Contract sum or the Contract time shall be limited to cost, time and impacts so identified.

D. CONTRACTOR REPRESENTATIONS

By preparing, approving, and/or submitting Shop Drawings, Product Data and Samples, the Contractor represents that the Contractor has determined and verified all materials, field measurements, and field construction criteria related thereto, and has checked and co-ordinated the information contained within each submittal with the requirements of the Work, the Project and the Contract Documents and prior reviews and approvals.

ARTICLE 14. SAMPLES AND TESTING

A. SAMPLES

The Contractor shall furnish for approval, with such promptness as to cause no delay in his or her work or in that of any other Contractor, all Samples as directed by the Architect/Engineer. The Architect/Engineer shall check and approve such Samples, with reasonable promptness, but only for conformance with the design intent of the Contract Documents and the Project, and for compliance with any submission requirements given in the Contract Documents.

B. TESTING - GENERAL

The Contractor shall provide such equipment and facilities as the Architect/Engineer may require for conducting field tests and for collecting and forwarding samples to be tested. Samples themselves shall not be incorporated into the Work after approval without the permission of the Architect/Engineer.

All materials or equipment proposed to be used may be tested at any time during their preparation or use. The Contractor shall furnish the required samples without charge and shall give sufficient Notice of the placing of orders to permit the testing thereof. Products may be sampled either prior to shipment or after being received at the site of the Work.

Tests shall be made by an accredited testing laboratory. Except as otherwise provided in the Specifications, sampling and testing of all materials, and the laboratory methods and testing equipment, shall be in accordance with the latest standards and tentative methods of the American Society of Testing Materials (ASTM). The cost of testing which is in addition to the requirements of the Specifications shall be paid by the Contractor if so directed by the Architect/Engineer, and the Contract sum shall be adjusted accordingly by Change Order ; provided however, that whenever testing shows portions of the Work to be deficient, all costs of testing including that required to verify the adequacy of repair or replacement work shall be the responsibility of the Contractor.

C. TESTING - CONCRETE AND SOILS

Unless otherwise specified or provided elsewhere in the Contract Documents, the Principal Representative will contract for and pay for the testing of concrete and for soils compaction testing through an independent laboratory or laboratories selected and approved by the Principal Representative. The Contractor shall assume the responsibility of arranging, scheduling and coordinating the concrete sample collection efforts and soils compaction efforts. Testing shall be performed in accordance with the requirements of the Specifications, and if no requirements are specified, the Contractor shall request instructions and testing shall be as directed by the Architect/Engineer or the soils engineer, as applicable, and in accordance with standard industry practices.

The Principal Representative and the Architect/Engineer shall be given reasonable advance notice of each concrete pour and reserve the right to either increase or decrease the number of cylinders or the frequency of tests.

Soil compaction testing shall be at random locations selected by the soils engineer. In general, soils compaction testing shall be as directed by the soils engineer and shall include all substrate prior to backfill or construction.

D. TESTING - OTHER

Additional testing required by the Specifications will be accomplished and paid for by the Principal Representative in a manner similar to that for concrete and soils unless noted otherwise in the Specifications. In any case, the Contractor will be responsible for arranging, scheduling and coordinating additional tests. Where the additional testing will be contracted and paid for by the Principal Representative the Contractor shall give the Principal Representative not less than one month advance written Notice of the date the first such test will be required.

ARTICLE 15. SUBCONTRACTS

The Contractor shall, within twenty one (21) days after the date of the Notice of Award, submit to the Architect/Engineer, the Principal Representative and State Buildings Programs a preliminary list of Subcontractors. It shall be as complete as possible at the time, showing all known Subcontractors planned for the work. The list shall be supplemented as other Subcontractors are determined by the Contractor and any such supplemental list shall be submitted to the Architect/Engineer, the Principal Representative and State Buildings Programs not less than ten (10) days before the Subcontractor commences work.

The Contractor's list shall include those Subcontractors, if any, which the Contractor indicated in its bid would be employed for specific portions of the Work if such indication was requested in the bid documents issued by the State. The substitution of any Subcontractor listed in the Contractor's bid shall be justified in writing not less than ten (10) days after the date of the Notice of Award, and shall be subject to the approval of the Principal Representative. For reasons such as the Subcontractor's refusal to perform as agreed, subsequent unavailability or later discovered bid errors, or other similar reasons, but not including the availability of a lower Subcontract price, such substitution may be approved. The Contractor shall bear any additional cost incurred by such substitutions.

The Contractor shall not employ any Subcontractor that the Architect/Engineer, within seven (7) days after the date of receipt of the Contractor's list of Subcontractors or any supplemental list, objects to in writing as being unacceptable to either the Architect/Engineer, the Principal Representative or State Buildings

Programs. If a Subcontractor is deemed unacceptable, the Contractor shall propose a substitute Subcontractor and the Contract sum shall be adjusted by any demonstrated difference between the Subcontractor's bids, except where the Subcontractor has been debarred by the State or fails to meet qualifications of the Contract Documents to perform the work proposed.

The Contractor shall be fully responsible to the Principal Representative for the acts and omissions of Subcontractors and of persons either directly or indirectly employed by them. All instructions or orders in respect to work to be done by Subcontractors shall be given to the Contractor.

ARTICLE 16. RELATIONS OF CONTRACTOR AND SUBCONTRACTOR

The Contractor agrees to bind each Subcontractor to the terms of these General Conditions and to the requirements of the Drawings and Specifications, and any Addenda thereto, and also all the other Contract Documents, so far as applicable to the work of such Subcontractor. The Contractor further agrees to bind each Subcontractor to those terms of the General Conditions which expressly require that Subcontractors also be bound, including without limitation, requirements that Subcontractors waive all rights of subrogation, provide adequate general commercial liability and property insurance, automobile insurance and workers' compensation insurance as provided in Article 25, Insurance.

Nothing contained in the Contract Documents shall be deemed to create any contractual relationship whatsoever between any Subcontractor and the State of Colorado acting by and through its Principal Representative.

ARTICLE 17. MUTUAL RESPONSIBILITY OF CONTRACTORS

Should the Contractor cause damage to any separate contractor on the work, the Contractor agrees, upon due Notice, to settle with such contractor by agreement, if he or she will so settle. If such separate contractor sues the Principal Representative on account of any damage alleged to have been so sustained, the Principal Representative shall notify the Contractor, who shall defend such proceedings if requested to do so by Principal Representative. If any judgment against the Principal Representative arises there from, the Contractor shall pay or satisfy it and pay all costs and reasonable attorney fees incurred by the Principal Representative, in accordance with Article 52C, Indemnification, provided the Contractor was given due Notice of an opportunity to settle.

ARTICLE 18. SEPARATE CONTRACTS

The Principal Representative reserves the right to enter into other contracts in connection with the Project or the Contract. The Contractor shall afford other contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work, and shall properly connect and coordinate his or her work with theirs. If any part of the Contractor's work depends, for proper execution or results, upon the work of any other contractor, the Contractor shall inspect and promptly report to the Architect/Engineer any defects in such work that render it unsuitable for such proper execution and results. Failure of the Contractor to so inspect and report shall constitute an acceptance of the other contractor's work as fit and proper for the reception of work, except as to defects which may develop in the other Contractor's work after the execution of the Contractor's work.

To insure the proper execution of subsequent work, the Contractor shall measure work already in place and shall at once report to the Architect/Engineer any discrepancy between the executed work and the Drawings.

ARTICLE 19. USE OF PREMISES

The Contractor shall confine apparatus, the storage of materials and the operations of workmen to limits indicated by law, ordinances, permits and any limits lines shown on the Drawings. The Contractor shall not unreasonably encumber the premises with materials.

The Contractor shall enforce all of the Architect/Engineer's instructions and prohibitions regarding, without limitation, such matters as signs, advertisements, fires and smoking.

ARTICLE 20. CUTTING, FITTING OR PATCHING

The Contractor shall do all cutting, fitting or patching of work that may be required to make its several parts come together properly and fit it to receive or be received by work of other Contractors shown upon, or reasonably inferred from, the Drawings and Specifications for the complete structure, and shall provide for such finishes to patched or fitted work as the Architect/Engineer may direct. The Contractor shall not endanger any work by cutting, excavating or otherwise altering the work and shall not cut or alter the work of any other Contractor save with the consent of the Architect/Engineer.

ARTICLE 21. UTILITIES

A. TEMPORARY UTILITIES

Unless otherwise specifically stated in the Specifications or on the Drawings, the Principal Representative shall be responsible for the locations of all utilities as shown on the Drawings or indicated elsewhere in the Specifications, subject to the Contractor's compliance with all statutory or regulatory requirements to call for utility locates. When actual conditions deviate from those shown the Contractor shall comply with the requirements of Article 37, Differing Site Conditions. The Contractor shall provide and pay for the installation of all temporary utilities required to supply all the power, light and water needed by him and other Contractors for their Work and shall install and maintain all such utilities in such manner as to protect the public and workmen and conform with any applicable laws and regulations. Upon completion of the work, he or she shall remove all such temporary utilities from the site. The Contractor shall pay for all consumption of power, light and water used by him or her and the other Contractors, without regard to whether such items are metered by temporary or permanent meters. The Superintendent shall have full authority over all trades and Subcontractors at any tier to prevent waste. The cut-off date on permanent meters shall be either the agreed date of the date of the Notice of Substantial Completion or the Notice of Approval of Occupancy/Use of the Project.

B. PROTECTION OF EXISTING UTILITIES

Where existing utilities, such as water mains, sanitary sewers, storm sewers and electrical conduits, are shown on the Drawings, the Contractor shall be responsible for the protection thereof, without regard to whether any such utilities are to be relocated or removed as a part of the Work. If any utilities are to be moved, the moving must be conducted in such manner as not to cause undue interruption or delay in the operation of the same.

C. CROSSING OF UTILITIES

When new construction crosses highways, railroads, streets, or utilities under the jurisdiction of State, city or other public agency, public utility or private entity, the Contractor shall secure proper written permission before executing such new construction. The Contractor will be required to furnish a proper release before final acceptance of the Work.

ARTICLE 22. UNSUITABLE CONDITIONS

The Contractor shall not work at any time, or permit any work to be done, under any conditions contrary to those recommended by manufacturers or industry standards which are otherwise proper, unsuited for proper execution, safety and performance. Any cost caused by ill-timed work shall be borne by the Contractor unless the timing of such work shall have been directed by the Architect/Engineer or the Principal Representative, after the award of the Contract, and the Contractor provided Notice of any additional cost.

ARTICLE 23. TEMPORARY FACILITIES

A. OFFICE FACILITIES

The Contractor shall provide and maintain without additional expense for the duration of the Project temporary office facilities, as required and as specified, for his or her own use and the use of the Architect/Engineer, representatives of the Principal Representative and State Buildings Programs.

B. TEMPORARY HEAT

The Contractor shall furnish and pay for all the labor, facilities, equipment, fuel and power necessary to supply temporary heating, ventilating and air conditioning, except to the extent otherwise specified, and shall be responsible for the installation, operation, maintenance and removal of such facilities and

equipment. Unless otherwise specified, the permanent HVAC system shall not be used for temporary heat in whole or in part. If the Contractor desires to put the permanent system into use, in whole or in part, the Contractor shall set it into operation and furnish the necessary fuel and manpower to safely operate, protect and maintain that HVAC system. Any operation of all or any part of the permanent HVAC system including operation for testing purposes shall not constitute acceptance of the system, nor shall it relieve the Contractor of his or her one-year guarantee of the system from the date of the Notice of Substantial Completion of the entire Project, and if necessary due to prior operation, the Contractor shall provide manufacturers' extended warranties from the date of the Contractor's use prior to the date of the Notice of Substantial Completion.

C. WEATHER PROTECTION

The Contractor shall, at all times, provide protection against weather, so as to maintain all work, materials, apparatus and fixtures free from injury or damages.

D. DUST PARTITIONS

If the Work involves work in an occupied existing building, the Contractor shall erect and maintain during the progress of the work, suitable dust-proof temporary partitions, or more permanent partitions as specified, to protect such building and the occupants thereof.

E. BENCH MARKS

The Contractor shall maintain any site bench marks provided by the Principal Representative and shall establish any additional benchmarks specified by the Architect/Engineer as necessary for the Contractor to layout the work and ascertain all grades and levels as needed.

F. SIGN

The Contractor shall erect and permit one 4' x 8' sign only at the site to identify the Project as specified or directed by the Architect/Engineer which shall be maintained in good condition during the life of the Project.

G. SANITARY PROVISION

The Contractor shall provide and maintain suitable, clean, temporary sanitary toilet facilities for any and all workmen engaged on the Work, for the entire construction period, in strict compliance with the requirement of all applicable codes, regulations, laws and ordinances, and no other facilities, new or existing, may be used by any person on the Project. When the Project is complete the Contractor shall promptly remove them from the site, disinfect, and clean or treat the areas as required. If any new construction surfaces in the Project other than the toilet facilities provided for herein are soiled at any time, the entire areas so soiled shall be completely removed from the Project and rebuilt.

ARTICLE 24. CLEANING UP

The Contractor shall keep the building and premises free from all surplus material, waste material, dirt and rubbish caused by employees or work, and at the completion of the Work shall remove all such surplus material, waste material, dirt, and rubbish, as well as all tools, equipment and scaffolding, and shall wash and clean all window glass and plumbing fixtures, perform cleanup and cleaning required by the Specifications and leave all of the work clean unless more exact requirements are specified.

ARTICLE 25. INSURANCE

A. GENERAL LIABILITY, PROPERTY DAMAGE AND AUTOMOBILE

The Contractor shall procure and maintain comprehensive commercial general liability and property damage insurance and comprehensive automobile liability and property damage insurance as hereinafter specified, at his or her own expense, during the life of this Contract. This insurance shall include a provision preventing cancellation without forty-five (45) days' prior Notice by certified mail and shall state whether the coverage is "claims made" or "per occurrence". The Contractor shall obtain "per occurrence" insurance unless otherwise agreed in writing by the Principal Representative. A completed Certificate of Insurance shall be filed with State Buildings Programs within ten (10) days after the date of the Notice of Award, said Certificate to specifically state the inclusion of the coverages and provisions set forth herein.

B. **Automobile Liability** and business auto liability covering liability arising out of any auto (including owned, hired and non-owned autos).

Occurrence basis policy-combined single limit of \$1,000,000

(Acord example) Minimum limit: \$1,000,000 combined single limit each accident

Coverages:

1. Specific waiver of subrogation
2. Contractual liability

C. **Umbrella/Excess Liability (for construction projects exceeding \$10,000,000, provide the following coverage)**: The vendor shall maintain umbrella/excess liability insurance on an occurrence basis in excess of the underlying insurance described in Sections A, B, and D, which is at least as broad as each and every area of the underlying policies. The amounts of insurance required in Sections A, B, and D may be satisfied by the vendor purchasing coverage for the limits specified or by any combination of underlying and umbrella limits, so long as the total amount of insurance is not less than the limits specified in each section previously mentioned.

(Acord example) Minimum limit: \$5,000,000 combined single limit and aggregate limit

Coverages:

1. Additional insured endorsement
2. Pay on behalf of wording
3. Concurrency of effective dates with primary
4. Blanket contractual liability
5. Punitive damages coverage (where not prohibited by law)

B. WORKERS' COMPENSATION INSURANCE

The Contractor shall procure and maintain Workers' Compensation Insurance at his or her own expense during the life of this Contract, including occupational disease provisions for all employees. This insurance, if issued by a private carrier, shall contain the same forty-five (45) days' Notice of cancellation as required in Article 25, Insurance for the Comprehensive General Liability Insurance. Evidence of such insurance shall be by the issuance of either a Certificate by the State Compensation Insurance Fund (or its successor) or, if issued by a private carrier, the completion of a Certificate of Insurance, and such Certificate shall be filed with the State Buildings Program. The Certificate shall be filed within ten (10) days after the date of the Notice of Award.

The Contractor shall also require each Subcontractor to furnish Workers' Compensation Insurance, including occupational disease provisions for all of the latter's employees, and to the extent not furnished, the Contractor accepts full liability and responsibility for Subcontractor's employees.

In cases where any class of employees engaged in hazardous work under this Contract at the site of the Project is not protected under the Workers' Compensation statute, the Contractor shall provide, and shall cause each Subcontractor to provide, adequate and suitable insurance for the protection of employees not otherwise protected.

C. BUILDER'S RISK INSURANCE

Unless otherwise expressly stated in the Supplementary General Conditions (e.g. where the State elects to provide for projects with a completed value of less than \$1,000,000), the Contractor shall effect and maintain a policy of insurance to provide, at Contractor's expense, All Risk Builder's Risk Insurance Coverage which shall be in the dollar amount of the total Project for which the Work of this Contract is to be done. Such policy may have a deductible clause but not to exceed ten thousand dollars (\$10,000.00).

The Contractor shall waive all rights of subrogation as regards the State of Colorado, its officials, its officers, its agents and its employees, all while acting within the scope and course of their employment. The Insurer shall not void such insurance policy by reason of the Contractor waiving said rights. The Contractor shall require all Subcontractors at any tier to similarly waive all such rights of subrogation and shall expressly include such a waiver in all subcontracts. The insurance shall remain in effect until the Date of Notice specified on the Notice of Acceptance, State Form SBP-6.27, whether or not the building or some part thereof is occupied in any manner prior to final acceptance of the Project, and shall remain fully in effect notwithstanding any acceptance of the work of any Subcontractor on the Project. Such insurance shall be in an amount equal to the total insurable value of the construction. Upon request, the amount of such insurance shall be increased to include the cost of any additional work to be done on the Project, or materials or equipment to be incorporated in the Project, or materials or equipment to be incorporated in the Project, under other independent contracts let or to be let. In such event, the Contractor shall be reimbursed for this cost as his or her share of the insurance in the same ratio as the ratio of the insurance represented by such independent contracts let or to be let to the total insurance carried.

All such insurance shall insure the State of Colorado acting by and through its Principal Representative, the Contractor and his or her Subcontractors at any tier as their interests may appear. The insurance shall include a loss payable provision naming the State Controller, as loss payee.

The Principal Representative, with approval of the State Controller, shall have the power to adjust and settle any loss. Unless it is agreed otherwise, all monies received shall be applied first on rebuilding or repairing the destroyed or injured work.

The Certificate of Insurance shall specifically state the inclusion of the provisions herein above. A certificate for such insurance shall be filed with State Buildings Programs within ten (10) days after date of Notice of Award. The Insurance shall include a provision preventing cancellation without forty five (45) days' prior Notice in writing by certified mail.

D. ADDITIONAL MISCELLANEOUS INSURANCE PROVISIONS

Certificates of Insurance and/or insurance policies required under this Contract shall be subject to the following stipulations and additional requirements:

1. The clause entitled "Other Insurance Provisions" contained in any policy including the State of Colorado as an additional named insured shall not apply to the State of Colorado;
2. Any and all deductibles or self-insured retentions contained in any Insurance policy shall be assumed by and at the sole risk of the Contractor;
3. If any of the said policies shall fail at any time to meet the requirements of the Contract Documents as to form or substance, or if a company issuing any such policy shall be or at any time cease to be approved by the Division of Insurance of the State of Colorado, or be or cease to be in compliance with any stricter requirements of the Contract Documents, the Contractor shall promptly obtain a new policy, submit the same to State Building Programs for approval if requested, and submit a Certificate of Insurance as hereinbefore provided. Upon failure of the Contractor to furnish, deliver and maintain such insurance as provided herein, this Contract, in the sole discretion of the State of Colorado, may be immediately declared suspended, discontinued, or terminated. Failure of the Contractor in obtaining and/or maintaining any required insurance shall not relieve the Contractor from any liability under the Contract, nor

shall the insurance requirements be construed to conflict with the obligations of the Contractor concerning indemnification;

4. All requisite insurance shall be obtained from financially responsible insurance companies, authorized to do business in the State of Colorado and acceptable to the State;
5. Receipt, review or acceptance by the State of any insurance policies or certificates of insurance required by this Contract shall not be construed as a waiver or relieve the Contractor from its obligation to meet the insurance requirements contained in these General Conditions.

ARTICLE 26. CONTRACTOR'S PERFORMANCE AND PAYMENT BONDS

The Contractor shall furnish a Performance Bond and a Labor and Material Payment Bond on State Forms SC-6.22, Performance Bond, and SC-6.221, Labor and Material Payment Bond, or such other forms as State Buildings Programs may approve for the Project, executed by a corporate Surety authorized to do business in the State of Colorado and in the full amount of the Contract sum. The expense of these bonds shall be borne by the Contractor and the bonds shall be filed with State Buildings Programs.

If, at any time, a Surety on such a bond is found to be, or ceases to be in strict compliance with any qualification requirements of the Contract Documents or the bid documents, or loses its right to do business in the State of Colorado, another Surety will be required, which the Contractor shall furnish to State Buildings Programs within ten (10) days after receipt of Notice from the State or after the Contractor otherwise becomes aware of such conditions.

ARTICLE 27. LABOR AND WAGES

In accordance with laws of Colorado, C.R.S. § 8-17-101, et. seq., as amended, Colorado labor shall be employed to perform the work to the extent of not less than eighty percent (80%) of each type or class of labor in the several classifications of skilled and common labor employed on the Project. If the Federal Davis-Bacon Act shall be applicable to the Project, as indicated in Article 54B, Modification of Article 27, the minimum wage rates to be paid on the Project will be specified in the Contract Documents.

ARTICLE 28. ROYALTIES AND PATENTS

The Contractor shall be responsible for assuring that all rights to use of products and systems have been properly arranged and shall take such action as may be necessary to avoid delay, at no additional charge to the Principal Representative, where such right is challenged during the course of the work. The Contractor shall pay all royalties and license fees required to be paid and shall defend all suits or claims for infringement of any patent rights and shall save the State of Colorado harmless from loss on account thereof, in accordance with Article 52C, Indemnification; provided, however, the Contractor shall not be responsible for such loss or defense for any copyright violations contained in the Contract Documents prepared by the Architect/Engineer or the Principal Representative of which the Contractor is unaware, or for any patent violations based on specified processes that the Contractor is unaware are patented or that the Contractor should not have had reason to believe were patented.

ARTICLE 29. ASSIGNMENT

Except as otherwise provided hereafter the Contractor shall not assign the whole or any part of this Contract without the written consent of the Principal Representative. This provision shall not be construed to prohibit assignments of the right to payment to the extent permitted by Section 4-9-406, C.R.S., as amended, provided that written Notice of assignment adequate to identify the rights assigned is received by the Principal Representative and the controller for the agency, department, or institution executing this Contract (as distinguished from the State Controller). Such assignment of the right to payment shall not be deemed valid until receipt by the Principal Representative and such controller and the Contractor assumes the risk that such written Notice of assignment is received by the Principal Representative and the controller for the agency, department, or institution involved. In case the Contractor assigns all or part of any moneys due or to become due under this Contract, the instrument of assignment shall contain a clause substantially to the effect that it is agreed that the right of the assignee in and to any moneys due or to become due to the Contractor shall be subject to all claims of all persons, firms, and corporations for services rendered or materials supplied for the performance of the work called for in this Contract, whether said service or materials were supplied prior to or after the assignment. Nothing in this Article shall be deemed a waiver of any other defenses available to the State against the Contractor or the assignee.

ARTICLE 30. CORRECTION OF WORK BEFORE ACCEPTANCE

The Contractor shall promptly remove from the premises all work or materials condemned or declared irreparably defective as failing to conform to the Contract Documents on receipt of written Notice from the Architect/Engineer or the Principal Representative, whether incorporated in the Work or not. If such materials shall have been incorporated in the Work, or if any unsatisfactory work is discovered, the Contractor shall promptly replace and re-execute his or her work in accordance with the requirements of the Contract Documents without expense to the Principal Representative, and shall also bear the expense of making good all work of other contractors destroyed or damaged by the removal or replacement of such defective material or work.

If the Contractor does not remove such condemned or irreparably defective work or material within a reasonable time, the Principal Representative may, after giving a second seven (7) day advance Notice to the Contractor and the Surety, remove them and may store the material at the Contractor's expense. The Principal Representative may accomplish the removal and replacement with its own forces or with another Contractor. If the Contractor does not pay the expense of such removal and pay all storage charges within ten (10) days thereafter, the Principal Representative may, upon ten (10) days' written Notice, sell such material at auction or at private sale and account for the net proceeds thereof, after deducting all costs and expenses which should have been borne by the Contractor. If the Contractor shall commence and diligently pursue such removal and replacement before the expiration of the seven day period, or if the Contractor shall show good cause in conjunction with submittal of a revised CPM schedule showing when the work will be performed and why such removal of condemned work should be scheduled for a later date, the Principal Representative shall not proceed to remove or replace the condemned work.

Should any defective work or material be discovered during the process of construction, or should reasonable doubt arise as to whether certain material or work is in accordance with the Contract Documents, the value of such defective or questionable material or work shall not be included in any application for payment, or if previously included, shall be deducted by the Architect/Engineer from the next application submitted by the Contractor.

If the Contractor does not perform repair, correction and replacement of defective work, in lieu of proceeding by issuance of a Notice of intent to remove condemned work as outlined above, the Principal Representative may, not less than seven (7) days after giving the original written Notice of the need to repair, correct, or replace defective work, deduct all costs and expenses of replacement or correction as instructed by the Architect/Engineer from the Contractor's next application for payment in addition to the value of the defective work or material. The Principal Representative may also make an equitable deduction from the Contract sum by unilateral Change Order, in accordance with Article 33, Payments Withheld and Article 35, Changes In The Work.

If the Contractor disagrees with the Notice to remove work or materials condemned or declared irreparably defective, the Contractor may request facilitated negotiation of the issue and the Principal Representative's right to proceed with removal and to deduct costs and expenses of repair shall be suspended and tolled until such time as the parties meet and negotiate the issue.

During construction, whenever the Architect/Engineer has advised the Contractor in writing, in the Specifications, by reference to Article 6, Architect/Engineer Decisions And Judgments, of these General Conditions or elsewhere in the Contract Documents of a need to observe materials in place prior to their being permanently covered up, it shall be the Contractor's responsibility to notify the Architect/Engineer at least forty-eight (48) hours in advance of such covering operation. If the Contractor fails to provide such notification, Contractor shall, at his or her expense, uncover such portions of the work as required by the Architect/Engineer for observation, and reinstall such covering after observation. When a covering operation is continued from day to day, notification of the commencement of a single continuing covering operation shall suffice for the activity specified so long as it proceeds regularly and without interruption from day to day, in which event the Contractor shall coordinate with the Architect/Engineer regarding the continuing covering operation.

ARTICLE 31. APPLICATIONS FOR PAYMENTS

A. CONTRACTOR'S SUBMITTALS

On or before the first day of each month and no more than five days prior thereto, the Contractor may submit applications for payment for the work performed during such month covering the portion of the Work completed as of the date indicated, and payments on account of this Contract shall be due within thirty (30) days after the last day of the period for which payment is requested. The Contractor shall submit the application for payment to the Architect/Engineer on State forms SBP-7.2, Certificate for Contractor's Payment, or such other format as the State Buildings Programs shall approve, in an itemized format in accordance with the schedule of values or a cost loaded CPM when required, supported to the extent reasonably required by the Architect/Engineer or the Principal Representative by receipts or other vouchers, showing payments for materials and labor, prior payments and payments to be made to Subcontractors and such other evidence of the Contractor's right to payments as the Architect/Engineer or Principal Representative may direct.

If payments are made on account of materials not incorporated in the Work but delivered and suitably stored at the site, or at some other location agreed upon in writing, such payments shall be conditioned upon submission by the Contractor of bills of sale or such other procedure as will establish the Principal Representative's title to such material or otherwise adequately protect the Principal Representative's interests, and shall provide proof of insurance whenever requested by the Principal Representative or the Architect/Engineer, and shall be subject to the right to inspect the materials at the request of either the Architect/Engineer or the Principal Representative.

All applications for payment, except the final application, and the payments there under, shall be subject to correction in the next application rendered following the discovery of any error.

B. ARCHITECT/ENGINEER CERTIFICATION

In accordance with the Architect/Engineer's agreement with the Principal Representative, the Architect/Engineer after appropriate observation of the progress of the work shall certify to the Principal Representative the amount that the Contractor is entitled to, and forward the application to the Principal Representative. If the Architect/Engineer certifies an amount different from the amount requested or otherwise alters the Contractor's application for payment, a copy shall be forwarded to the Contractor.

If the Architect/Engineer is unable to certify all or portions of the amount requested due to the absence or lack of required supporting evidence, the Architect/Engineer shall advise the Contractor of the deficiency. If the deficiency is not corrected at the end of ten (10) days, the Architect/Engineer may either certify the remaining amounts properly supported to which the Contractor is entitled, or return the application for payment to the Contractor for revision with a written explanation as to why it could not be certified.

C. RETAINAGE WITHHELD

Unless otherwise provided in the Supplementary General Conditions, an amount equivalent to ten percent (10%) of the amount shown to be due the Contractor on each application for payment shall be withheld until fifty percent (50%) of the work required by the Contract has been performed. Thereafter, the remaining Certificates for Contractor's Payment (SBP-7.2) shall be paid without retaining additional funds, if in the opinion of the Architect/Engineer and the Principal Representative, satisfactory progress is being made in the Work. The withheld percentage of the contract price of any such work, improvement, or construction shall be administered according to § 24-91-101, et seq., C.R.S., as amended, and except as provided in § 24-91-103, C.R.S., as amended, and Article 31D, shall be retained until the Work or discrete portions of the Work, have been completed satisfactorily, finally or partially accepted, and advertised for final settlement as further provided in Article 41.

D. RELEASE OF RETAINAGE

The Contractor may, for satisfactory and substantial reasons shown to the Principal Representative's satisfaction, make a written request to the Principal Representative and the Architect/Engineer for release of part or all of the withheld percentage applicable to the work of a Subcontractor which has

completed the subcontracted work in a manner finally acceptable to the Architect/Engineer, the Contractor, and the Principal Representative. Any such request shall be supported by a written approval from the Surety furnishing the Contractor's bonds and any surety that has provided a bond for the Subcontractor. The release of any such withheld percentage shall be further supported by such other evidence as the Architect/Engineer or the Principal Representative may require, including but not limited to, evidence of prior payments made to the Subcontractor, copies of the Subcontractor's contract with the Contractor, any applicable warranties, as-built information, maintenance manuals and other customary close-out documentation. Neither the Principal Representative nor the Architect Engineer shall be obligated to review such documentation nor shall they be deemed to assume any obligations to third parties by any review undertaken.

The Contractor's obligation under these General Conditions to guarantee work for one year from the date of the Notice of Substantial Completion or the date of any Notice of Partial Substantial Completion of the applicable portion or phase of the Project, shall be unaffected by such partial release; unless a Notice of Partial Substantial Completion is issued for the work subject to the release of retainage.

Any rights of the Principal Representative which might be terminated by or from the date of any final acceptance of the Work, whether at common law or by the terms of this Contract, shall not be affected by such partial release of retainage prior to any final acceptance of the entire Project.

The Contractor remains fully responsible for the Subcontractor's work and assumes any risk that might arise by virtue of the partial release to the Subcontractor of the withheld percentage, including the risk that the Subcontractor may not have fully paid for all materials, labor and equipment furnished to the Project.

If the Principal Representative considers the Contractor's request for such release satisfactory and supported by substantial reasons, the Architect/Engineer shall make a "final inspection" of the applicable portion of the Project to determine whether the Subcontractor's work has been completed in accordance with the Contract Documents. A final punch list shall be made for the Subcontractor's work and the procedures of Article 41, Completion, Final Inspection, Acceptance and Settlement, shall be followed for that portion of the work, except that advertisement of the intent to make final payment to the Subcontractor shall be required only if the Principal Representative has reason to believe that a supplier or Subcontractor to the Subcontractor for which the request is made, may not have been fully paid for all labor and materials furnished to the Project.

ARTICLE 32. CERTIFICATES FOR PAYMENTS

State Form SBP-7.2, Certificate For Contractor's Payment, and its continuation detail sheets, when submitted, shall constitute the Certificate of Contractor's Application for Payment, and shall be a representation by the Contractor to the Principal Representative that the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and materials for which payment is requested have been incorporated into the Project except as noted in the application. If requested by the Principal Representative the Certificate of Contractor's Application for Payment shall be sworn under oath and notarized.

ARTICLE 33. PAYMENTS WITHHELD

The Architect/Engineer, the Principal Representative or State Buildings Programs may withhold, or on account of subsequently discovered evidence nullify, the whole or any part of any application on account of, but not limited to any of the following:

1. Defective work not remedied;
2. Claims filed or reasonable evidence indicating probable filing of claims;
3. Failure of the Contractor to make payments to Subcontractors for material or labor;
4. A reasonable doubt that the Contract can be completed for the balance of the contract price then unpaid;

5. Damage or injury to another contractor or any other person, persons or property except to the extent of coverage by a policy of insurance;
6. Failure to obtain necessary permits or licenses or to comply with applicable laws, ordinances, codes, rules or regulations or the directions of the Architect/Engineer;
7. Failure to submit a monthly construction schedule;
8. Failure of the Contractor to keep work progressing in accordance with the time schedule;
9. Failure to keep a superintendent on the work;
10. Failure to maintain as built drawings of the work in progress;
11. Unauthorized deviations by the Contractor from the Contract Documents; or
12. On account of liquidated damages.

In addition, the Architect Engineer, Principal Representative or State Buildings Programs may withhold or nullify the whole or any part of any application for any reason noted elsewhere in these General Conditions of the Contract. Nullification shall mean reduction of amounts shown as previously paid on the application. The amount withheld or nullified may be in such amount as the Architect/Engineer or the Principal Representative estimates to be required to allow the State to accomplish the Work, cure the failure and cover any damages or injuries, including an allowance for attorneys fees and costs where appropriate. When the grounds for such withholding or nullifying are removed, payment shall be made for the amounts thus withheld or nullified on such grounds.

ARTICLE 34. DEDUCTIONS FOR UNCORRECTED WORK

If the Architect/Engineer and the Principal Representative deem it inexpedient to correct work injured or not performed in accordance with the Contract Documents, the Principal Representative may, after consultation with the Architect/Engineer and ten (10) days' Notice to the Contractor of intent to do so, make reasonable reductions from the amounts otherwise due the Contractor on the next application for payment. Notice shall specify the amount or terms of any contemplated reduction. The Contractor may during this period elect to correct or perform the work. If the Contractor does not elect to correct or perform the work, an equitable deduction from the Contract sum shall be made by Change Order, in accordance with Article 35, Changes In The Work, unilaterally if necessary. If either party elects facilitation of this issue after Notice is given, the ten-day notice period shall be extended and tolled until facilitation has occurred.

ARTICLE 35. CHANGES IN THE WORK

The Principal Representative, or such other Procurement Officer as the Principal Representative may designate, without invalidating the Agreement, and with the approval of State Buildings Programs and the State Controller, may order extra work or make changes with or without the consent of the Contractor as hereafter provided, by altering, adding to or deducting from the Work, the Contract sum being adjusted accordingly. All such changes in the Work shall be within the general scope of and be executed under the conditions of the Contract, except that any claim for extension of time made necessary due to the change or any claim of other delay or other impacts caused by or resulting from the change in the Work shall be presented by the Contractor and adjusted by Change Order to the extent known at the time such change is ordered and before proceeding with the extra or changed work. Any claims for extension of time or of delay or other impacts, and any costs associated with extension of time, delay or other impacts, which are not presented before proceeding with the change in the Work, and which are not adjusted by Change Order to the extent known, shall be waived.

The Architect/Engineer shall have authority to make minor changes in the Work, not involving extra cost, and not inconsistent with the intent of the Contract Documents, but otherwise, except in an emergency endangering life or property, no extra work or change in the Contract Documents shall be made unless by 1) a written Change Order, approved by the Principal Representative, State Buildings Programs, and the State Controller prior to proceeding with the changed work; or 2) by an Emergency Field Change Order approved by the Principal Representative and State Buildings Programs as hereafter provided in Article 35C, Emergency Field Ordered Changed Work; or 3) by an allocation in writing of any allowance already provided in the encumbered contract amount, the Contract sum being later adjusted to decrease the Contract sum by any unallocated or unexpended amounts remaining in such allowance. No change to the Contract sum shall be valid unless so ordered.

A. THE VALUE OF CHANGED WORK

1. *The value of any extra work or changes in the Work shall be determined by agreement in one or more of the following ways:*
 - a. *By estimate and acceptance of a lump-sum amount;*
 - b. *By unit prices specified in the Agreement, or subsequently agreed upon, that are extended by specific quantities;*
 - c. *By actual cost plus a fixed fee in a lump sum amount for profit, overhead and all indirect and off-site home office costs, the latter amount agreed upon in writing prior to starting the extra or changed work.*
2. *Where the Contractor and the Principal Representative cannot agree on the value of extra work, the Principal Representative may order the Contractor to perform the changes in the Work and a Change Order may be unilaterally issued based on an estimate of the change in the Work prepared by the Architect/Engineer. The value of the change in the Work shall be the Principal Representative's determination of the amount of equitable adjustment attributable to the extra work or change. The Principal Representative's determination shall be subject to appeal by the Contractor pursuant to the claims process in Article 36, Claims. The Principal Representative is the Procurement Officer for purposes of all of the remedies provisions of the Contract.*
3. *Except as otherwise provided in Article 35B, Detailed Breakdown, below, the Cost Principles of the Colorado Procurement Rules in effect on the date of this Contract, pursuant to § 24-107-101, C.R.S., as amended, shall govern all Contract changes.*

B. DETAILED BREAKDOWN

In all cases where the value of the extra or changed work is not known based on unit prices in the Contractor's bid or the Agreement, a detailed change proposal shall be submitted by the Contractor on a Change Order Proposal (SC-6.312), or in such other format as the State Buildings Program approves, with which the Principal Representative may require an itemized list of materials, equipment and labor, indicating quantities, time and cost for completion of the changed work.

Such detailed change proposals shall be stated in lump sum amounts and shall be supported by a separate breakdown, which shall include estimates of all or part of the following when requested by the Architect/Engineer or the Principal Representative:

1. *Materials, indicating quantities and unit prices including taxes and delivery costs if any (separated where appropriate into general, mechanical and electrical and/or other Subcontractors' work; and the Principal Representative may require in its discretion any significant subcontract costs to be similarly and separately broken down).*
2. *Labor costs, indicating hourly rates and time and labor burden to include Social Security and other payroll taxes such as unemployment, benefits and other customary burdens.*
3. *Costs of project management time and superintendence time of personnel stationed at the site, and other field supervision time, but only where a time extension, other than a weather delay, is approved as part of the Change Order, and only where such project management time and superintendence time is directly attributable to and required by the change; provided however that additional cost of on-site superintendence shall be allowable whenever in the opinion of the Architect/Engineer the impact of multiple change requests to be concurrently performed will result in inadequate levels of supervision to assure a proper result unless additional superintendence is provided.*
4. *Construction equipment (including small tools). Expenses for equipment and fuel shall be based on customary commercially reasonable rental rates and schedules. Equipment and hand tool costs shall not include the cost of items customarily owned by workers.*
5. *Workers' compensation costs, if not included in labor burden.*
6. *The cost of commercial general liability and property damage insurance premiums but only to the extent charged the Contractor as a result of the changed work.*

7. Overhead and profit, as hereafter specified.
8. Builder's risk insurance premium costs.
9. Bond premium costs.
10. Testing costs not otherwise excluded by these General Conditions.
11. Subcontract costs.

Unless modified in the Supplementary General Conditions, overhead and profit shall not exceed the percentages set forth in the table below.

	OVERHEAD	PROFIT	COMMISSION
To the Contractor or to Subcontractors for the portion of work performed with their own forces:	10%	5%	
To the Contractor or to Subcontractors for work performed by others at a tier immediately below either of them:	5%		5%

Overhead shall include: a) insurance premium for policies not purchased for the Project and itemized above, b) home office costs for office management, administrative and supervisory personnel and assistants, c) estimating and change order preparation costs, d) incidental job burdens, e) legal costs, f) data processing costs, g) interest costs on capital, h) general office expenses except those attributable to increased rental expenses for temporary facilities, and all other indirect costs, but shall not include the Social Security tax and other direct labor burdens. The term "work" as used in the proceeding table shall include labor, materials and equipment and the "Commission" shall include all costs and profit for carrying the subcontracted work at the tiers below except direct costs as listed in items 1 through 11 above if any.

On proposals for work involving both additions and credits in the amount of the Contract sum, the overhead and profit will be allowed on the net increase only. On proposals resulting in a net deduct to the amount of the Contract sum, profit on the deducted amount shall be returned to the Principal Representative at fifty percent (50%) of the rate specified. The inadequacy of the profit specified shall not be a basis for refusal to submit a proposal.

Except in the case of Change Orders or Emergency Field Change Orders agreed to on the basis of a lump sum amount or unit prices as described in paragraphs 35A1 and 35A2 above, The Value of Changed Work, the Contractor shall keep and present a correct and fully auditable account of the several items of cost, together with vouchers, receipts, time cards and other proof of costs incurred, summarized on a Change Order form (SC-6.31) using such format for supporting documentation as the Principal Representative and State Buildings Programs approve. This requirement applies equally to work done by Subcontractors. Only auditable costs shall be reimbursable on Change Orders where the value is determined on the basis of actual cost plus a fixed fee pursuant to paragraph 35A3 above, or where unilaterally determined by the Principal Representative on the basis of an equitable adjustment in accordance with the Procurement Rules, as described above in Article 35A, The Value Of Changed Work.

Except for proposals for work involving both additions and credits, changed work shall be adjusted and considered separately for work either added or omitted. The amount of adjustment for work omitted shall be estimated at the time it is directed to be omitted, and when reasonable to do so, the agreed adjustment shall be reflected on the schedule of values used for the next Contractor's application for payment.

The Principal Representative reserves the right to contract with any person or firm other than the Contractor for any or all extra work; however, unless specifically required in the Contract Documents, the Contractor shall have no responsibility without additional compensation to supervise or coordinate the work of persons or firms separately contracted by the Principal Representative.

C. EMERGENCY FIELD CHANGE ORDERED WORK

The Principal Representative, without invalidating the Agreement, and with the approval of State Buildings Programs and without the approval of the State Controller, may order extra work or make changes in the case of an emergency that is a threat to life or property or where the likelihood of delays in processing a normal Change Order will result in substantial delays and or significant cost increases for the Project. Emergency Field Orders are not to be used solely to expedite normal Change Order processing absent a clear showing of a high potential for significant and substantial cost or delay. Such changes in the Work may be directed through issuance of an Emergency Field Change Order signed by the Contractor, the Principal Representative (or by a designee specifically appointed to do so in writing), and approved by the Director of State Buildings Program or his or her delegate. The change shall be directed using a State Change Order form (SC-6.31), modified with the words "Emergency Field Change Order" at the top.

If the amount of the adjustment of the Contract price and time for completion can be determined at the time of issuance of the Emergency Field Change Order, those adjustments shall be reflected on the face of the Emergency Field Change Order. Otherwise, the Emergency Field Change Order shall reflect a not to exceed (NTE) amount for any schedule adjustment (increasing or decreasing the time for completion) and an NTE amount for any adjustment to Contract sum, which NTE amount shall represent the maximum amount of adjustment to which the Contractor will be entitled, including direct and indirect costs of changed work, as well as any direct or indirect costs attributable to delays, inefficiencies or other impacts arising out of the change. Emergency Field Change Orders directed in accordance with this provision need not bear the approval signatures of the State Controller.

On Emergency Field Change Orders where the price and schedule have not been finally determined, the Contractor shall submit final costs for adjustment as soon as practicable. No later than seven (7) days after issuance, except as otherwise permitted, and every seven days thereafter, the Contractor shall report all costs to the Principal Representative and the Architect/Engineer. Weekly cost reports and the final adjustment of the Emergency Field Change Orders amount and the adjustment to the Project time for completion shall be prepared in accordance with the procedures described in Article 35A, The Value of Changed Work, and B, Detailed Breakdown, above. Unless otherwise provided in writing signed by the Director of State Buildings Programs to the Principal Representative and the Contractor, describing the extent and limits of any greater authority, individual Emergency Field Change Orders shall not be issued for more than \$25,000, nor shall the cumulative value of Emergency Field Change Orders exceed an amount of \$100,000.

D. APPROPRIATION LIMITATIONS - § 24-91-103.6, C.R.S., as amended

The amount of money appropriated, as shown on the Agreement (SC 6.21), is equal to or in excess of the Contract amount. No Change Order, Emergency Field Change Order, or other type of order or directive shall be issued by the Principal Representative, or any agent acting on his or her behalf, which directs additional compensable work to be performed, which work causes the aggregate amount payable under the Contract to exceed the amount appropriated for the original Contract, as shown on the Agreement (SC-6.13), unless one of the following occurs: (1) the Contractor is provided written assurance from the Principal Representative that sufficient additional lawful appropriations exist to cover the cost of the additional work; or (2) the work is covered by a contractor remedy provision under the Contract, such as a claim for extra cost. By way of example only, no assurance is required for any order, directive or instruction by the Architect/Engineer or the Principal Representative to perform work which is determined to be within the performance required by the Contract Documents; the Contractor's remedy shall be as described elsewhere in these General Conditions.

Written assurance shall be in the form of an Amendment to the Contract reciting the source and amount of such appropriation available for the Project. No remedy granting provision of this Contract shall obligate the Principal Representative to seek appropriations to cover costs in excess of the amounts recited as available to pay for the work to be performed.

ARTICLE 36. CLAIMS

It is the intent of these General Conditions to provide procedures for speedy and timely resolution of disagreements and disputes at the lowest level possible. In the spirit of on the job resolution of job site issues, the parties are encouraged to use the partnering processes of Article 2D, Partnering, Communications and Cooperation, before turning to the more formal claims processes described in this Article 36, Claims. The use of non-binding dispute resolution, whether through the formal processes described in Article 39, Non-Binding Dispute Resolution – Facilitated Negotiations, or through less formal alternative processes developed as part of a partnering plan, are also encouraged. Where such process cannot resolve the issues in dispute, the claims process that follows is intended to cause the issues to be presented, decided and where necessary, documented in close proximity to the events from which the issues arise. To that end, and in summary of the remedy granting process that follows commencing with the next paragraph of this Article 36, Claims, the Contractor shall 1) first, seek a decision by the Architect/Engineer, and 2) shall second, informally present the claim to Principal Representative as described hereafter, and 3) failing resolution in the field, give Notice of intent to exercise statutory rights of review of a formal contract controversy, and 4) seek resolution outside the Contract as provided by the Procurement Code.

If the Contractor claims that any instructions, by detailed drawings, or otherwise, or any other act or omission of the Architect/Engineer or Principal Representative affecting the scope of the Contractor's work, involve extra cost, extra time or changes in the scope of the Work under this Contract, the Contractor shall have the right to assert a claim for such costs or time, provided that before either proceeding to execute such work (except in an emergency endangering life or property), or filing a Notice of claim, the Contractor shall have obtained or requested a written decision of the Architect/Engineer following the procedures as provided in Article 6A and B, Architect/Engineer Decisions and Judgments, respectively; provided, however, that in the case of a directed change in the Work pursuant to Article 36A4, no written judgment or decision of the Architect/Engineer is required. If the Contractor is delayed by the lack of a response to a request for a decision by the Architect/Engineer, the Contractor shall give Notice in accordance with Article 38, Delays And Extensions Of Time.

Unless it is the Architect/Engineer's judgment and determination that the work is not included in the performance required by the Contract Documents, the Contractor shall proceed with the work as originally directed. Where the Contractor's claim involves a dispute concerning the value of work unilaterally directed pursuant to Article 35A4 the Contractor shall also proceed with the work as originally directed while his or her claim is being considered.

The Contractor shall give the Principal Representative and the Architect/Engineer Notice of any claim promptly after the receipt of the Architect/Engineer's decision, but in no case later than three (3) business days after receipt of the Architect/Engineer's decision (or no later than ten (10) days from the date of the Contractor's request for a decision when the Architect/Engineer fails to decide as provided in Article 6). The Notice of claim shall state the grounds for the claim and the amount of the claim to the extent known in accordance with the procedures of Article 35, Changes In The Work. The period in which Notice must be given may be extended by the Principal Representative if requested in writing by the Contractor with good cause shown, but any such extension to be effective shall be in writing.

The Principal Representative shall respond in writing, with a copy to the Architect/Engineer, within a reasonable time, and except where a request for facilitation of negotiation has been made as hereafter provided, in no case later than seven (7) business days (or at such other time as the Contractor and Principal Representative agree) after receipt of the Contractor's Notice of claim regarding such instructions or alleged act or omission. If no response to the Contractor's claim is received within seven (7) business days of Contractor's Notice (or at such other time as the Contractor and Principal Representative agree) and the instructions have not been retracted, it shall be deemed that the Principal Representative has denied the claim.

The Principal Representative may grant or deny the claim in whole or in part, and a Change Order shall be issued if the claim is granted. To the extent any portion of claim is granted where costs are not clearly shown, the Principal Representative may direct that the value of that portion of the work be determined by

any method allowed in Article 35A, The Value Of Changed Work. Except in the case of a deemed denial, the Principal Representative shall provide a written explanation regarding any portion of the Contractor's claim that is denied.

If the Contractor disagrees with the Principal Representative's judgment and determination on the claim and seeks an equitable adjustment of the Contract sum or time for performance, he or she shall give Notice of intent to exercise his or her statutory right to seek a decision on the contract controversy within ten (10) days of receipt of the Principal Representative's decision denying the claim. A "contract controversy," as such term is used in the Colorado Procurement Code, § 24-109-106, C.R.S., shall not arise until the initial claim process described above in this Article 36 has been properly exhausted by the Contractor. The Contractor's failure to proceed with work directed by the Architect/Engineer or to exhaust the claim process provided above in this Article 36, shall constitute an abandonment of the claim by the Contractor and a waiver of the right to contest the decision in any forum.

At the time of filing the Notice of intent to exercise his or her statutory right to seek a decision on the contract controversy, the Contractor may request that the Principal Representative defer a decision on the contract controversy until a later date or until the end of the Project. If the Principal Representative agrees, he or she shall so advise the Contractor in writing. If no such request is made, or if the Principal Representative does not agree to such a request, the Principal Representative shall render a written decision within twenty (20) business days and advise the Contractor of the reasons for any denial. Unless the claim has been decided by the Principal Representative (as opposed to delegates of the Principal Representative), the person who renders the decision on this statutory contract controversy shall not be the same person who decided the claim. To the extent any portion of the contract controversy is granted where costs are not clearly shown, the Principal Representative may direct that the value of that portion of the work be determined by any method allowed in Article 35A, The Value Of Changed Work. In the event of a denial the Principal Representative shall give Notice to the Contractor of his or her right to administrative and judicial reviews as provided in the Colorado Procurement Code, § 24-109-201 *et seq.*, C.R.S., as amended. If no decision regarding the contract controversy is issued within twenty (20) business days of the Contractor's giving Notice (or such other date as the Contractor and Principal Representative have agreed), and the instructions have not been retracted or the alleged act or omission have not been corrected, it shall be deemed that the Principal Representative has ruled by denial on the contract controversy. Except in the case of a deemed denial, the Principal Representative shall provide an explanation regarding any portion of the contract controversy that involves denial of the Contractor's claim.

Either the Contractor or the Principal Representative may request facilitation of negotiations concerning the claim or the contract controversy, and if requested, the parties shall consult and negotiate before the Principal Representative decides the issue. Any request for facilitation by the Contractor shall be made at the time of the giving of Notice of the claim or Notice of the contract controversy. Facilitation shall extend the time for the Principal Representative to respond by commencing the applicable period at the completion of the facilitated negotiation, which shall be the last day of the parties' meeting, unless otherwise agreed in writing.

Disagreement with the decision of the Architect Engineer, or the decision of the Principal Representative to deny any claim or denying the contract controversy, shall not be grounds for the Contractor to refuse to perform the work directed or to suspend or terminate performance. During the period that any claim or contract controversy decision is pending under this Article 36, Claims, the Contractor shall proceed diligently with the work directed.

In all cases where the Contractor proceeds with the work and seeks equitable adjustment by filing a claim and or statutory appeal, the Contractor shall keep a correct account of the extra cost, in accordance with Article 35B, Detailed Breakdown supported by receipts. The Principal Representative shall be entitled to reject any claim or contract controversy whenever the foregoing procedures are not followed and such accounts and receipts are not presented.

The payments to the Contractor in respect of such extra costs shall be limited to reimbursement for the current additional expenditure by the Contractor made necessary by the change in the work, plus a

reasonable amount for overhead and profit, determined in accordance with Article 35B, Detailed Breakdown, determined solely with reference to the additional work, if any, required by the change.

ARTICLE 37. DIFFERING SITE CONDITIONS

A. NOTICE IN WRITING

The Contractor shall promptly, and where possible before conditions are disturbed, give the Architect/Engineer and the Principal Representative Notice in writing of:

- 1. subsurface or latent physical conditions at the site differing materially from those indicated in or reasonably assumed from the information provided in the Contract Documents; and,*
- 2. unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents.*

The Architect/Engineer shall promptly investigate the conditions, and if it is found that such conditions do materially so differ and cause an increase or decrease in the Contractor's costs of performance of any part of the work required by the Contract Documents, whether or not such work is changed as a result of such conditions, an equitable adjustment shall be made and the Contract sum shall be modified in accordance with Article 35, Changes In The Work.

If the time required for completion of the work affected by such materially differing conditions will extend the work on the critical path as indicated on the CPM schedule, the time for completion shall also be equitably adjusted.

B. LIMITATIONS

No claim of the Contractor under this clause shall be allowed unless the Contractor has given the Notice required in Article 37A, Notice In Writing, above. The time prescribed for presentation and adjustment in Articles 36, Claims and 38, Delays And Extensions Of Time, shall be reasonably extended by the State to the extent required by the nature of the differing conditions; provided, however, that even when so extended no claim by the Contractor for an equitable adjustment hereunder shall be allowed if not quantified and presented prior to the date the Contractor requests a final inspection pursuant to Article 41A, Notice Of Completion.

ARTICLE 38. DELAYS AND EXTENSIONS OF TIME

If the Contractor is delayed at any time in the progress of the Work by any act or neglect of the State of Colorado or the Architect/Engineer, or of any employee or agent of either, or by any separately employed Contractor or by strikes, lockouts, fire, unusual delay in transportation, unavoidable casualties or any other causes beyond the Contractor's control, including weather delays as defined below, the time of Completion of the Work shall be extended for a period equal to such portion of the period of delays directly affecting the completion of the Work as the Contractor shall be able to show he or she could not have avoided by the exercise of due diligence.

The Contractor shall provide Notice in writing to the Architect/Engineer, the Principal Representative and State Buildings Programs within three (3) business days from the beginning of such delay and shall file a written claim for an extension of time within seven (7) business days after the period of such delay has ceased, otherwise, any claim for an extension of time is waived.

Provided that the Contractor has submitted reasonable schedules for approval when required by Article 12, Requests for Information and Schedules, if no schedule is agreed to fixing the dates on which the responses to requests for information or detail drawings will be needed, or Shop Drawings, Product Data or Samples are to be reviewed as required or allowed by Article 12B, Schedules, no extension of time will be allowed for the Architect/Engineer's failure to furnish such detail drawings as needed, or for the failure to initially review Shop Drawings, Product Data or Samples, except in respect of that part of any delay in furnishing detail drawings or instructions extending beyond a reasonable period after written demand for such detailed drawings or instructions is received by the Architect/Engineer. In any event, any claim for an extension of time for such cause will be recognized only to the extent of delay directly caused by failure to furnish detail

drawings or instructions or to review Shop Drawings, Product Data or Samples pursuant to schedule, after such demand.

All claims for extension of time due to a delay claimed to arise or result from ordered changes in the scope of the Work, or due to instructions claimed to increase the scope of the Work, shall be presented to the Architect/Engineer, the Principal Representative and State Buildings Programs as part of a claim for extra cost, if any, in accordance with Article 36, Claims, and in accordance with the Change Order procedures required by Article 35, Changes In The Work.

Except as otherwise provided in this paragraph, no extension of time shall be granted when the Contractor has failed to utilize a CPM schedule or otherwise identify the Project's critical path as specified in Article 12, Requests for Information and Schedules, or has elected not to do so when allowed by the Supplementary General Conditions or the Specifications to use less sophisticated scheduling tools, or has failed to maintain such a schedule. Delay directly affecting the completion of the Work shall result in an extension of time only to the extent that completion of the Work was affected by impacts to the critical path shown on Contractor's CPM schedule. Where the circumstances make it indisputable in the opinion of the Architect/Engineer that the delay affected the completion of the Work so directly that the additional notice of the schedule impact by reference to a CPM schedule was unnecessary, a reasonable extension of time may be granted.

Extension of the time for completion of the Work will be granted for delays due to weather conditions only when the Contractor demonstrates that such conditions were more severe and extended than those reflected by the ten-year average for the month, as evidenced by the Climatological Data, U. S. Department of Commerce, for the Project area.

Extensions of the time for completion of the Work due to weather will be granted on the basis of one and three tenths (1.3) calendar days for every day that the Contractor would have worked but was unable to work, with each separate extension figured to the nearest whole calendar day.

For weather delays and delays caused by events, acts or omissions not within the control of the Principal Representative or any person acting on the Principal Representative's behalf, the Contractor shall be entitled to an extension of time only and shall not be entitled to recovery of additional cost due to or resulting from such delays. This Article does not, however, preclude the recovery of damages for delay by either party under other provisions in the Contract Documents.

ARTICLE 39. NON-BINDING DISPUTE RESOLUTION – FACILITATED NEGOTIATIONS

The Contractor and Principal Representative agree to designate one or more mutually acceptable persons willing and able to facilitate negotiations and communications for the resolution of conflicts, disagreements or disputes between them at the specific request of either party with regard to any Project decision of either of them or any decision of the Architect/Engineer. The designation of such person(s) shall not carry any obligation to use their services except that each party agrees that if the other party requests the intervention of such person(s) with respect to any such conflict, dispute or disagreement, the non-requesting party shall participate in good faith attempts to negotiate a resolution of the issue in dispute. If the parties cannot agree on a mutually acceptable person to serve in this capacity one shall be so appointed; provided, however, that either party may request the director of State Buildings Programs to appoint such a person, who, if appointed, shall be accepted for this purpose by both the Contractor and the Principal Representative.

The cost, if any, of the facilitative services of the person(s) so designated shall be shared if the parties so agree in any partnering plan; or in the absence of agreement the cost shall be borne by the party requesting the facilitation of negotiation.

Any dispute, claim, question or disagreement arising from or relating to the Contract or an alleged breach of the Contract may be subject to a request by either party for facilitated negotiation subject to the limitations hereafter listed, and the parties shall participate by consultation and negotiation with each other, as guided by the facilitator and with recognition of their mutual interests, in an attempt to reach an equitable solution satisfactory to both parties.

The obligation to participate in facilitated negotiations shall be as described above and elsewhere in these General Conditions, as by way of example in Article 36, Claims, or Article 34, Deductions for Uncorrected Work, and to the extent not more particularly described or limited elsewhere, each party's obligations shall be as follows:

1. a party shall not initiate communication with the facilitator regarding the issues in dispute; except that any request for facilitation shall be made in writing with copies sent, faxed or delivered to the other party;
2. a party shall prepare a brief written description of its position if so requested by the facilitator (who may elect to first discuss the parties' positions with each party separately in the interest of time and expense);
3. a party shall respond to any reasonable request for copies of documents requested by the facilitator, but such requests, if voluminous, may consist of an offer to allow the facilitator access to the parties' documents;
4. a party shall review any meeting agenda proposed by a facilitator and endeavor to be informed on the subjects to be discussed;
5. a party shall meet with the other party and the facilitator at a mutually acceptable place and time, or, if none can be agreed to, at the time and place designated by the facilitator for a period not to exceed four hours unless the parties agree to a longer period;
6. a party shall endeavor to assure that any facilitation meeting shall be attended by any other persons in their employ that the facilitator requests be present, if reasonably available, including the Architect/Engineer;
7. each party shall participate in such facilitated face-to-face negotiations of the issues in dispute through persons fully authorized to resolve the issue in dispute;
8. each party shall be obligated to participate in negotiations requested by the other party and to perform the specific obligations described in paragraphs (1) through (10) this Article 39, Facilitated Negotiation, no more than three times during the course of the Project;
9. neither party shall be under any obligation to resolve any issue by facilitated negotiation, but each agrees to participate in good faith and the Principal Representative shall direct the Architect/Engineer to appropriately document any resolution or agreement reached and to execute any Amendment or Change Order to the Contract necessary to implement their agreement; and,
10. any discussions and documents prepared exclusively for use in the negotiations shall be deemed to be matters pertaining to settlement negotiations and shall not be subsequently available in further proceedings except to the extent of any documented agreement.

In accordance with State Fiscal Rules and Article 52F, Choice of Law; No Arbitration, nothing in this Article 39 shall be deemed to call for arbitration or otherwise obligate the State to participate in any form of binding alternative dispute resolution.

A partnering plan developed as described in Article 2D, Communications and Cooperation, may modify or expand the requirements of this Article but may not reduce the obligation to participate in facilitated negotiations when applicable. In the case of small projects estimated to be valued under \$500,000, the requirements of this Article may be deleted from this Contract, by modification in Article 54, Optional Provisions And Elections. When so modified, the references to the parties' right to elect facilitated negotiation elsewhere in these General Conditions shall be deleted.

ARTICLE 40. RIGHT OF OCCUPANCY

The Principal Representative shall have the right to take possession of and to use any completed or partially completed portions of the Work, even if the time for completing the entire Work or portions of the Work has not expired and even if the Work has not been finally accepted, and the Contractor shall fully cooperate with the Principal Representative to allow such possession and use. Such possession and use shall not constitute an acceptance of such portions of the Work.

Prior to any occupancy of the Project, an inspection shall be made by the Architect/Engineer, State Buildings Programs and the Contractor. Such inspection shall be made for the purpose of ensuring that the building is

secure, protected by operation safety systems as designed, operable exits, power, lighting and HVAC systems, and otherwise ready for the occupancy intended and the Notice of Substantial Completion has been issued for the occupancy intended. The inspection shall also document existing finish conditions to allow assessment of any damage by occupants. The Contractor shall assist the Principal Representative in completing and executing State Form SBP-01, Approval of Occupancy/Use, prior to the Principal Representative's possession and use. Any and all areas so occupied will be subject to a final inspection when the Contractor complies with Article 41, Completion, Final Inspection, Acceptance and Settlement.

ARTICLE 41. COMPLETION, FINAL INSPECTION, ACCEPTANCE AND SETTLEMENT

A. NOTICE OF COMPLETION

When the Work, or a discrete physical portion of the Work (as hereafter described) which the Principal Representative has agreed to accept separately, is substantially complete and ready for final inspection, the Contractor shall file a written Notice with the Architect/Engineer that the Work, or such discrete physical portion, in the opinion of the Contractor, is substantially complete under the terms of the Contract. The Contractor shall prepare and submit with such Notice a comprehensive list of items to be completed or corrected prior to final payment, which shall be subject to review and additions as the Architect/Engineer or the Principal Representative shall determine after inspection. If the Architect/Engineer or the Principal Representative believe that any of the items on the list of items submitted, or any other item of work to be corrected or completed, or the cumulative number of items of work to be corrected or completed, will prevent a determination that the Work is substantially complete, those items shall be completed by the Contractor and the Notice shall then be resubmitted.

B. FINAL INSPECTION

Within ten (10) days after the Contractor files written Notice that the Work is substantially complete, the Architect/Engineer, the Principal Representative, and the Contractor shall make a "final inspection" of the Project to determine whether the Work is substantially complete and has been completed in accordance with the Contract Documents. State Buildings Programs shall be notified of the inspection not less than three (3) business days in advance of the inspection. The Contractor shall provide the Principal Representative and the Architect/Engineer an updated punch list in sufficient detail to fully outline the following:

1. work to be completed, if any; and
2. work not in compliance with the Drawings or Specifications, if any.

A final punch list shall be made by the Architect/Engineer in sufficient detail to fully outline to the Contractor:

1. work to be completed, if any;
2. work not in compliance with the Drawings or Specifications, if any; and
3. unsatisfactory work for any reason, if any.

The required number of copies of the final punch list will be countersigned by the authorized representative of the Principal Representative and will then be transmitted by the Architect/Engineer to the Contractor, the Principal Representative, and State Buildings Programs. The Architect/Engineer's final punch list shall control over the Contractor's preliminary punch list.

C. NOTICE OF SUBSTANTIAL COMPLETION

Notice of Substantial Completion shall establish the date of substantial completion of the Project. The Contractor acknowledges and agrees that because the departments, agencies and institutions of the State of Colorado are generally involved with the business of the public at large, greater care must be taken in establishing the date of substantial completion than might otherwise be the case to ensure that a project or building or discrete physical portion of the Work is fully usable and safe for public use, and that such care necessarily raises the standard by which the concept of substantial completion is applied for a public building.

The Notice of Substantial Completion shall not be issued until the following have been fully established:

1. All required building code inspections have been called for and the appropriate code officials have affixed their signatures to the Building Inspection Record indicating successful completion of all required code inspections;
2. All required corrections noted on the Building Inspection Record shall have been completed unless the Architect/Engineer, the Principal Representative and State Buildings Programs, in their complete and absolute discretion, all concur that the condition requiring the remaining correction is not in any way life threatening, does not otherwise endanger persons or property, and does not result in any undue inconvenience or hardship to the Principal Representative or the public;
3. The building, structure or Project can be fully and comfortably used by the Principal Representative and the public without undue interference by the Contractor's employees and workers during the completion of the final punch list taking into consideration the nature of the public uses intended and taking into consideration any stage or level of completion of HVAC system commissioning or other system testing required by the Specifications to be completed prior to issuance of the Notice of Substantial Completion;
4. The Project has been fully cleaned as required by these General Conditions, and as required by any stricter requirements of the Specifications, and the overall state of completion is appropriate for presentation to the public; and
5. The Contractor has provided a schedule for the completion of each and every item identified on the punch list which specifies the Subcontractor or trade responsible for the work, and the dates the completion or correction of the item will be commenced and finished; such schedule will show completion of all remaining final punch list items within the period indicated in the Contract for final punch list completion prior to Final Acceptance, with the exception of only those items which are beyond the control of the Contractor despite due diligence. The schedule shall provide for a reasonable punch list inspection process. Unless liquidated damages have been specified in Article 54D(2), the cost to the Principal Representative, if any, for re-inspections due to failure to adhere to the Contractor's proposed punch-list completion schedule shall be the responsibility of the Contractor and may be deducted by the Principal Representative from final amounts due to the Contractor.

Substantial completion of the entire Project shall not be conclusively established by a decision by the Principal Representative to take possession and use of a portion, or all of the Project, where portions of the Project cannot meet all the criteria noted above. Notice of Substantial Completion for the entire Project shall, however, only be withheld for substantial reasons when the Principal Representative has taken possession and uses all of the Project in accordance with the terms of Article 40, Right Of Occupancy. Failure to furnish the required completion schedule shall constitute a substantial reason for withholding the issuance of any Notice of Substantial Completion.

The Contractor shall have the right to request a final inspection of any discrete physical portion of the Project when in the opinion of the Architect/Engineer a final punch list can be reasonably prepared, without confusion as to which portions of the Project are referred to in any subsequent Notice of Partial Final Settlement which might be issued after such portion is finally accepted. Discrete physical portions of the Project may be, but shall not necessarily be limited to, such portions of the Project as separate buildings where a Project consists of multiple buildings. Similarly, an addition to an existing building where the Project also calls for renovation or remodeling of the existing building may constitute a discrete physical portion of the Project. In such circumstances, when in the opinion of the Principal Representative, the Architect/Engineer and State Buildings Programs, the requirements for issuance of a Notice of Substantial Completion can be satisfied with respect to the discrete portion of the Project, a partial Notice of Substantial Completion may be issued for such discrete physical portion of the Project. The ability to beneficially occupy a discrete physical portion of the Project shall also be considered.

D. NOTICE OF ACCEPTANCE

The Notice of Acceptance shall establish the completion date of the Project. It shall not be authorized until the Contractor shall have performed all of the work to allow completion and approval of the Pre-Acceptance Checklist (SBP-05). It shall not be authorized until the Pre-Acceptance punch list (SBP-06) shall have been prepared and approved containing no more than ten items of work remaining to be completed or repaired.

Where partial Notices of Substantial Completion have been issued, partial Notices of Final Acceptance may be similarly issued when appropriate for that portion of the Work. Partial Notice of Final Acceptance may also be issued to exclude the work described in Change Orders executed during late stages of the Project where a later completion date for the Change Ordered work is expressly provided for in the Contract as amended by the Change Order, provided the work can be adequately described to allow partial advertisement of any Notice of Partial Final Settlement to be issued without confusion as to the work included for which final payment will be made.

E. SETTLEMENT

Final payment and settlement shall be made on the date fixed and published for such payment except as hereafter provided. The Principal Representative shall not authorize final payment until all items on the Pre-Acceptance punch list (SBP-06) have been completed, the Notice of Acceptance issued, and the Notice of Contractors Settlement published. If the work shall be substantially completed, but Final Acceptance and completion thereof shall be prevented through delay in correction of minor defects, or unavailability of materials or other causes beyond the control of the Contractor, the Principal Representative in his or her discretion may release to the Contractor such amounts as may be in excess of three times the cost of completing the unfinished work or the cost of correcting the defective work, as estimated by the Architect/Engineer and approved by State Buildings Programs. Before the Principal Representative may issue the Notice of Contractor's Settlement and advertise the Project for final payment, the Contractor shall have corrected all items on the punch list except those items for which delayed performance is expressly permitted, subject to withholding for the cost thereof, and shall have:

1. Delivered to the Architect/Engineer:
 - a. All guarantees and warranties;
 - b. All statements to support local sales tax refunds, if any;
 - c. Three (3) complete bound sets of required operating maintenance instructions; and,
 - d. One (1) set of as-built Contract Documents showing all job changes.
2. Demonstrated to the operating personnel of the Principal Representative the proper operation and maintenance of all equipment.

Upon completion of the foregoing the Project shall be advertised in accordance with the Notice of Contractor's Settlement by two publications of Notice, the last publication appearing at least ten (10) days prior to the time of final settlement. Publication and final settlement should not be postponed or delayed solely by virtue of unresolved claims against the Project or the Contractor from Subcontractors, suppliers or materialmen based on good faith disputes; the resolution of the question of payment in such cases being directed by statute.

Except as hereafter provided, on the date of final settlement thus advertised, provided the Contractor has submitted a written Notice to the Architect/Engineer that no claims have been filed, and further provided the Principal Representative shall have received no claims, final payments and settlement shall be made in full. If any unpaid claim for labor, materials, rental machinery, tools, supplies or equipment is filed before payment in full of all sums due the Contractor, the Principal Representative and the State Controller shall withhold from the Contractor on the date established for final settlement, sufficient funds to insure the payment of such claim, until the same shall have been paid or withdrawn, such payment or withdrawal to be evidenced by filing a receipt in full or an order for withdrawal signed by the claimant or his or her duly authorized agent or assignee. The amount so withheld may be in the

amount of 125% of the claims or such other amount as the Principal Representative reasonably deems necessary to cover expected legal expenses. Such withheld amounts shall be in addition to any amount withheld based on the cost to compete unfinished work or the cost to repair defective work. However, as provided by statute, such funds shall not be withheld longer than ninety (90) days following the date fixed for final settlement with the Contractor, as set forth in the published Notice of Contractor's Settlement, unless an action at law shall be commenced within that time to enforce such unpaid claim and a Notice of such action at law shall have been filed with the Principal Representative and the State Controller. At the expiration of the ninety (90) day period, the Principal Representative shall authorize the State Controller to release to the Contractor all other money not the subject of such action at law or withheld based on the cost to compete unfinished work or the cost to repair defective work.

Notices of Partial Final Settlement may be similarly advertised, provided all conditions precedent have been satisfied as though that portion of the work affected stood alone, a Notice of Partial Acceptance has been issued, and the consent of surety to the partial final settlement has been obtained in writing. Thereafter, partial final payments may be made to the Contractor subject to the same conditions regarding unpaid claims.

ARTICLE 42. GENERAL WARRANTY AND CORRECTION OF WORK AFTER ACCEPTANCE

The Contractor warrants that the materials used and the equipment furnished shall be new and of good quality unless specified to the contrary. The Contractor further warrants that the Work shall in all respects be free from material defects not permitted by the Specifications and shall be in accordance with the requirements of the Contract Documents. Neither the final certificate for payment nor any provision in the Contract Documents shall relieve the Contractor of responsibility for defects or faulty materials or workmanship. The Contractor shall be responsible to the Principal Representative for such warranties for the longest period permitted by any applicable statute of limitations.

In addition to these general warranties, and without limitation of these general warranties, for a period of one year after the date of any Notice of Substantial Completion, or any Notice of Partial Substantial Completion if applicable, the Contractor shall remedy defects, and faulty workmanship or materials, and work not in accordance with the Contract Documents which was not accepted at the time of the Notice of Final Acceptance, all in accordance with the provisions of Article 45, One-Year Guarantee And Special Guarantees And Warranties.

ARTICLE 43. LIENS

Colorado statutes do not provide for any right of lien against public buildings. In lieu thereof, § 38-26-107, C.R.S., provides adequate relief for any claimant having furnished labor, materials, rental machinery, tools, equipment, or services toward construction of the particular public work in that final payment may not be made to a Contractor until all such creditors have been put on Notice by publication in the public press of such pending payment and given opportunity for a period of up to ninety (90) days to stop payment to the Contractor in the amount of such claims.

ARTICLE 44. ONE-YEAR GUARANTEE AND SPECIAL GUARANTEES AND WARRANTIES

A. ONE-YEAR GUARANTEE OF THE WORK

The Contractor shall guarantee to remedy defects and repair or replace the Work for a period of one year from the date of the Notice of Substantial Completion or from the dates of any partial Notices of Substantial Completion issued for discrete physical portions of the Work. The Contractor shall remedy any defects due to faulty materials or workmanship and shall pay for, repair and replace any damage to other work resulting there from, which shall appear within a period of one year from the date of such Notice(s) of Substantial Completion. The Contractor shall also remedy any deviation from the requirements of the Contract Documents which shall later be discovered within a period of one year from the date of the Notice of Substantial Completion; provided, however, that the Contractor shall not be required to remedy deviations from the requirements of the Contract Documents where such deviations were obvious, apparent and accepted by the Architect/Engineer or the Principal Representative at the time of the Notice of Final Acceptance. The Principal Representative shall give

Notice of observed defects or other work requiring correction with reasonable promptness. Such Notice shall be in writing to the Architect/Engineer and the Contractor.

The one year guarantee of the Contractor's work may run separately for discrete physical portions of the Work for which partial Notices of Substantial Completion have been issued, however, it shall run from the last Notice of Substantial Completion with respect to all or any systems common to the work to which more than one Notice of Substantial Completion may apply.

This one-year guarantee shall not be construed to limit the Contractor's general warranty described in Article 42, General Warranty and Correction of Work After Acceptance, that all materials and equipment are new and of good quality, unless specified to the contrary, and that the Work shall in all respects be free from material defects not permitted by the Specifications and in accordance with the requirements of the Contract Documents.

B. SPECIAL GUARANTEES AND WARRANTIES

In case of work performed for which product, manufacturers or other special warranties are required by the Specifications, the Contractor shall secure the required warranties and deliver copies thereof to the Principal Representative through the Architect/Engineer upon completion of the work.

These product, manufacturers or other special warranties, as such, do not in any way lessen the Contractor's responsibilities under the Contract. Whenever guarantees or warranties are required by the Specifications for a longer period than one year, such longer period shall govern.

ARTICLE 45. GUARANTEE INSPECTIONS AFTER COMPLETION

The Architect/Engineer, the Principal Representative and the Contractor together shall make at least two (2) complete inspections of the work after the Work has been determined to be substantially complete and accepted. One such inspection, the "Six-Month Guarantee Inspection," shall be made approximately six (6) months after date of the Notice of Substantial Completion, unless in the case of smaller projects valued under \$500,000 this inspection is declined in Article 54A, Modification of Article 45, in which case the inspection to occur at six months shall not be required. Another such inspection, the "Eleven-Month Guaranty Inspection" shall be made approximately eleven (11) months after the date of the Notice of Substantial Completion. The Principal Representative shall schedule and so notify all parties concerned, including State Buildings Programs, of these inspections. If more than one Notice of Substantial Completion has been issued at the reasonable discretion of the Principal Representative separate eleven month inspections may be required where the one year guarantees do not run reasonably concurrent.

Written punch lists and reports of these inspections shall be made by the Architect/Engineer and forwarded to the Contractor, the Principal Representative, State Buildings Programs, and all other participants within ten (10) days after the completion of the inspections. The punch list shall itemize all guarantee items, prior punch list items still to be corrected or completed and any other requirements of the Contract Documents to be completed which were not waived by final acceptance because they were not obvious or could not reasonably have been previously observed. The Contractor shall immediately initiate such remedial work as may be necessary to correct any deficiencies or defective work shown by this report, and shall promptly complete all such remedial work in a manner satisfactory to the Architect/Engineer, the Principal Representative and State Buildings Programs.

If the Contractor fails to promptly correct all deficiencies and defects shown by this report, the Principal Representative may do so, after giving the Contractor ten (10) days written Notice of intention to do so.

The State of Colorado, acting by and through the Principal Representative, shall be entitled to collect from the Contractor all costs and expenses incurred by it in correcting such deficiencies and defects, as well as all damages resulting from such deficiencies and defects.

ARTICLE 46. TIME OF COMPLETION AND LIQUIDATED DAMAGES

It is hereby understood and mutually agreed, by and between the parties hereto, that the date of beginning, rate of progress, and the time for completion of the Work to be done hereunder are ESSENTIAL

CONDITIONS of this Agreement, and it is understood and agreed that the Work embraced in this Contract shall be commenced at the time specified in the Notice to Proceed (SC-6.26).

It is further agreed that time is of the essence of each and every portion of this Contract, and of any portion of the Work described on the Drawings or Specifications, wherein a definite and certain length of time is fixed for the performance of any act whatsoever. The parties further agree that where under the Contract additional time is allowed for the completion of the Work or any identified portion of the Work, the new time limit or limits fixed by such extension of the time for completion shall be of the essence of this Agreement.

The Contractor acknowledges that subject to any limitations in the Advertisement for Bids, issued for the Project, the Contractor's bid is consistent with and considers the number of days to substantially complete the Project and the number of days to finally complete the Project to which the parties may have stipulated in the Agreement, which stipulation was based on the Contractor's bid. The Contractor agrees that work shall be prosecuted regularly, diligently and uninterruptedly at such rate of progress as will ensure the Project will be substantially complete, and fully and finally complete, as recognized by the issuance of all required Notices of Substantial Completion and Notices of Final Acceptance, within any times stipulated and specified in the Agreement, as the same may be amended by Change Order or other written modification, and that the Principal Representative will be damaged if the times of completion are delayed.

It is expressly understood and agreed, by and between the parties hereto, that the times for the Substantial Completion of the Work or for the final acceptance of the Work as may be stipulated in the Agreement, and as applied here and in Article 54D, Modifications of Article 46, are reasonable times for these stages of completion of the Work, taking into such consideration all factors, including the average climatic range and usual industrial conditions prevailing in the locality of the building operations.

If the Contractor shall neglect, fail or refuse to complete the Work within the times specified in the Agreement, such failure shall constitute a breach of the terms of the Contract and the State of Colorado, acting by and through the Principal Representative, shall be entitled to liquidated damages for such neglect, failure or refusal, as specified in Article 54D, Modification of Article 46.

The Contractor and the Contractor's Surety shall be jointly liable for and shall pay the Principal Representative, or the Principal Representative may withhold, the sums hereinafter stipulated as liquidated damages for each calendar day of delay until the entire Project is 1) substantially completed, and the Notice (or all Notices) of Substantial Completion are issued, 2) finally complete and accepted and the Notice (or all Notices) of Acceptance are issued, or 3) both. Delay in substantial completion shall be measured from the Date of the Notice to Proceed and delay in final completion and acceptance shall be measured from the Date of the Notice of Substantial Completion.

In the first instance, specified in Article 54D(1), Modification of Article 46, liquidated damages, if any, shall be the amount specified therein, for each calendar day of delay beginning after the stipulated number of days for Substantial Completion from the date of the Notice to Proceed, until the date of the Notice of Substantial Completion. Unless otherwise specified in any Supplementary General Conditions, in the event of any partial Notice of Substantial Completion, liquidated damages shall accrue until all required Notices of Substantial Completion are issued.

In the second instance, specified in Article 54D(2), Modification of Article 46, liquidated damages, if any, shall be the amount specified in Article 54D, Modification of Article 46, for each calendar day in excess of the number of calendar days specified in the Contractor's bid for the Project and stipulated in the Agreement to finally complete the Project (as defined by the issuance of the Notice of Acceptance) after the final Notice of Substantial Completion has been issued.

In the third instance, when so specified in both Articles 54D(1) and (2), both types of liquidated damages shall be separately assessed where those delays have occurred.

The parties expressly agree that said amounts are a reasonable estimate of the presumed actual damages that would result from any of the breaches listed, and that any liquidated damages that are assessed have

been agreed to in light of the difficulty of ascertaining the actual damages that would be caused by any of these breaches at the time this Contract was formed; the liquidated damages in the first instance representing an estimate of damages due to the inability to use the Project; the liquidated damages in the second instance representing an estimate of damages due to the additional administrative, technical, supervisory and professional expenses related to and arising from the extended closeout period including delivery of any or all guarantees and warranties, the submittals of sales and use tax payment forms, the calling for the final inspection and the completion of the final punch list.

The parties also agree and understand that the liquidated damages to be assessed in each instance are separate and distinct, although potentially cumulative, damages for the separate and distinct breaches of delayed substantial completion or final acceptance. Such liquidated damages shall not be avoided by virtue of the fact of concurrent delay caused by the Principal Representative, or anyone acting on behalf of the Principal Representative, but in such event the period of delay for which liquidated damages are assessed shall be equitably adjusted in accordance with Article 38, Delays And Extensions Of Time.

ARTICLE 47. DAMAGES

If either party to this Contract shall suffer damage under this Contract in any manner because of any wrongful act or neglect of the other party or of anyone employed by either of them, then the party suffering damage shall be reimbursed by the other party for such damage. Except to the extent of damages liquidated for the Contractor's failure to achieve timely completion as set forth in Article 46, Time of Completion and Liquidated Damages, the Principal Representative shall be responsible for, and at his or her option may insure against, loss of use of any existing property not included in the Work, due to fire or otherwise, however caused. Notwithstanding the foregoing, or any other provision of this Contract, to the contrary, no term or condition of this contract shall be construed or interpreted as a waiver, express or implied, of any of the immunities, rights, benefits, protection, or other provisions of the Colorado Governmental Immunity Act, Section 24-10-101, *et seq.*, CRS, as now or hereafter amended. The parties understand and agree that liability for claims for injuries to persons arising out of negligence of the State of Colorado, its departments, institutions, agencies, boards, officials and employees is controlled and limited by the provisions of Section 24-10-101, *et seq.*, CRS, as now or hereafter amended and the risk management statutes, Section 24-30-1501, *et seq.*, CRS, as now or hereafter amended.

Notice of intent to file a claim under this clause shall be made in writing to the party liable within a reasonable time of the first observance of such damage and not later than the time of final payment, except that in the case of claims by the Principal Representative involving warranties against faulty work or materials Notice shall be required only to the extent stipulated elsewhere in these General Conditions. Claims made to the Principal Representative involving extra cost or extra time arising by virtue of instructions to the Contractor to which Article 36, Claims, applies shall be made in accordance with Article 36. Other claims arising under the Contract involving extra cost or extra time which are made to the Principal Representative under this clause shall also be made in accordance with the procedures of Article 36, whether or not arising by virtue of instructions to the Contractor; provided however that it shall not be necessary to first obtain or request a written judgment of the Architect/Engineer.

Provided written Notice of intent to file a claim is provided as required in the preceding paragraph, nothing in this Article shall limit or restrict the rights of either party to bring an action at law or to seek other relief to which either party may be entitled, including consequential damages, if any, and shall not be construed to limit the time during which any action might be brought. Nothing in these General Conditions shall be deemed to limit the period of time during which any action may be brought as a matter of contract, tort, warranty or otherwise, it being the intent of the parties to allow any and all actions at law or in equity for such periods as the law permits. All such rights shall, however be subject to the obligation to assert claims and to appeal denials pursuant to Article 36, Claims, where applicable.

ARTICLE 48. STATE'S RIGHT TO DO THE WORK; TEMPORARY SUSPENSION OF WORK; DELAY DAMAGES

A. STATE'S RIGHT TO DO THE WORK

If after receipt of Notice to do so, the Contractor should neglect to prosecute the Work properly or fail to perform any provision of the Contract, the Principal Representative, after a second seven (7) days'

advance written Notice to the Contractor and the Surety may, without prejudice to any other remedy the Principal Representative may have, take control of all or a portion of the Work, as the Principal Representative deems necessary and make good such deficiencies deducting the cost thereof from the payment then or thereafter due the Contractor, as provided in Article 30, Correction Of Work Before Acceptance and Article 33, Payments Withheld, provided, however, that the Architect/Engineer shall approve the amount charged to the Contractor by approval of the Change Order.

B. TEMPORARY SUSPENSION OF WORK

The State, acting for itself or by and through the Architect/Engineer, shall have the authority to suspend the Work, either wholly or in part, for such period or periods as may be deemed necessary due to:

1. *Unsuitable weather;*
2. *Faulty workmanship;*
3. *Improper superintendence;*
4. *Contractor 's failure to carry out orders or to perform any provision of the Contract Documents;*
5. *Loss of, or restrictions to, appropriations;*
6. *Conditions, which may be considered unfavorable for the prosecution of the Work.*

If it should become necessary to stop work for an indefinite period, the Contractor shall store materials in such manner that they will not become an obstruction or become damaged in any way; and he or she shall take every precaution to prevent damage to or deterioration of the Work, provide suitable drainage and erect temporary structures where necessary.

Notice of suspension of work shall be provided to the Contractor in writing stating the reasons therefore. The Contractor shall again proceed with the work when so notified in writing.

The Contractor understands and agrees that the State of Colorado cannot predict with certainty future revenues and could ultimately lack the revenue to fund the appropriations applicable to this Contract. The Contractor further acknowledges and agrees that in such event that State may, upon Notice to the Contractor, suspend the work in anticipation of a termination of the Contract for the convenience of the State, pursuant to Article 50, Termination For Convenience of State. If the Contract is not so terminated the Contract sum and the Contract time shall be equitably adjusted at the time the Principal Representative directs the work to be recommenced and gives Notice that the revenue to fund the appropriation is available.

C. DELAY DAMAGES

The Principal Representative and the State of Colorado shall be liable to the Contractor for the payment of any claim for extra costs, extra compensation or damages occasioned by hindrances or delays encountered in the work only when and to the limited extent that such hindrance or delay is caused by an act or omission within the control of the Principal Representative, the Architect/Engineer or other persons or entities acting on behalf of the Principal Representative. Further, the Principal Representative and the State of Colorado shall be liable to the Contractor for the payment of such a claim only if the Contractor has provided required Notice of the delay or impact, or has presented its claim for an extension of time or claim of other delay or other impact due to changes ordered in the work before proceeding with the changed work. Except as otherwise provided, claims for extension of time shall be Noticed and filed in accordance with Article 38, Delays and Extensions of Time, within three (3) business days of the beginning of the delay with any claim filed within seven (7) days after the delay has ceased, or such claim is waived. Claims for extension of time or for other delay or other impact resulting from changes ordered in the Work shall be presented and adjusted as provided in Article 35, Changes in the Work.

ARTICLE 49. STATE'S RIGHTS TO TERMINATE CONTRACT

A. GENERAL

If the Contractor should be adjudged bankrupt, or if he or she should make a general assignment for the benefit of his or her creditors, or if a receiver should be appointed to take over his affairs, or if he or

she should fail to prosecute his or her work with due diligence and carry the work forward in accordance with the construction schedule and the time limits set forth in the Contract Documents, or if he or she should fail to subsequently perform one or more of the provisions of the Contract Documents to be performed by him, the Principal Representative may serve written Notice on the Contractor and the Surety on performance and payment bonds, stating his or her intention to exercise one of the remedies hereinafter set forth and the grounds upon which the Principal Representative bases his or her right to exercise such remedy.

In such event, unless the matter complained of is satisfactorily cleared within ten (10) days after delivery of such Notice, the Principal Representative may, without prejudice to any other right or remedy, exercise one of such remedies at once, having first obtained the concurrence of the Architect/Engineer in writing that sufficient cause exists to justify such action.

B. CONDITIONS AND PROCEDURES

1. *The Principal Representative may terminate the services of the Contractor, which termination shall take effect immediately upon service of Notice thereof on the Contractor and his or her Surety, whereupon the Surety shall have the right to take over and perform the Contract. If the Surety does not provide Notice to the Principal Representative of its intent to commence performance of the Contract within ten (10) days after delivery of the Notice of termination, the Principal Representative may take over the Work, take possession of and use all materials, tools, equipment and appliances on the premises and prosecute the Work to completion by such means as he or she shall deem best. In the event of such termination of his or her service, the Contractor shall not be entitled to any further payment under the Contract until the Work is completed and accepted. If the Principal Representative takes over the Work and if the unpaid balance of the contract price exceeds the cost of completing the Work, including compensation for any damages or expenses incurred by the Principal Representative through the default of the Contractor, such excess shall be paid to the Contractor. If, however, the cost, expenses and damages as certified by the Architect/Engineer exceed such unpaid balance of the contract price, the Contractor and his or her Surety shall pay the difference to the Principal Representative.*
2. *The Principal Representative may require the Surety on the Contractor's bond to take control of the Work and see to it that all the deficiencies of the Contractor are made good, with due diligence within ten (10) days of delivery of Notice to the Surety to do so. As between the Principal Representative and the Surety, the cost of making good such deficiencies shall all be borne by the Surety. If the Surety takes over the Work, either by election upon termination of the services of the Contractor pursuant to Section B(1) of this Article 49, State's Right To Terminate Contract, or upon instructions from the Principal Representative to do so, the provisions of the Contract Documents shall govern the work to be done by the Surety, the Surety being substituted for the Contractor as to such provisions, including provisions as to payment for the Work, the times of completion and provisions of this Article as to the right of the Principal Representative to do the Work or to take control of all or a portion of the Work.*
3. *The Principal Representative may take control of all or a portion of the Work and make good the deficiencies of the Contractor, or the Surety if the Surety has been substituted for the Contractor, with or without terminating the Contract, employing such additional help as the Principal Representative deems advisable in accordance with the provisions of Article 48A, State's Right To Do The Work; Temporary Suspension Of Work; Delay Damages. In such event, the Principal Representative shall be entitled to collect from the Contractor and his or her Surety, or to deduct from any payment then or thereafter due the Contractor, the costs incurred in having such deficiencies made good and any damages or expenses incurred through the default of Contractor, provided the Architect/Engineer approves the amount thus charged to the Contractor.*
If the Contract is not terminated, a Change Order to the Contract shall be executed, unilaterally if necessary, in accordance with the procedures of Article 35, Changes In The Work.

C. ADDITIONAL CONDITIONS

If any termination by the Principal Representative for cause is later determined to have been improper, the termination shall be automatically converted to and deemed to be a termination by the Principal Representative for convenience and the Contractor shall be limited in recovery to the compensation provided for in Article 50, Termination For Convenience Of State. Termination by the Contractor shall not be subject to such conversion.

ARTICLE 50. TERMINATION FOR CONVENIENCE OF STATE

A. NOTICE OF TERMINATION

The performance of Work under this Contract may be terminated, in whole or from time to time in part, by the State whenever for any reason the Principal Representative shall determine that such termination is in the best interest of State. Termination of work hereunder shall be effected by delivery to the Contractor of a Notice of such termination specifying the extent to which the performance of work under the Contract is terminated and the date upon which such termination becomes effective.

B. PROCEDURES

After receipt of the Notice of termination, the Contractor shall, to the extent appropriate to the termination, cancel outstanding commitments hereunder covering the procurement of materials, supplies, equipment and miscellaneous items. In addition, the Contractor shall exercise all reasonable diligence to accomplish the cancellation or diversion of all applicable outstanding commitments covering personal performance of any work terminated by the Notice. With respect to such canceled commitments, the Contractor agrees to:

- 1. settle all outstanding liabilities and all claims arising out of such cancellation of commitments, with approval or ratification of the Principal Representative, to the extent he or she may require, which approval or ratification shall be final for all purposes of this clause; and,*
- 2. assign to the State, in the manner, at the time, and to the extent directed by the Principal Representative, all of the right, title, and interest of the Contractor under the orders and subcontracts so terminated, in which case the State shall have the right, in its discretion, to settle or pay any or all claims arising out of the termination of such orders and subcontracts.*

The Contractor shall submit his or her termination claim to the Principal Representative promptly after receipt of a Notice of termination, but in no event later than three (3) months from the effective date thereof, unless one or more extensions in writing are granted by the Principal Representative upon written request of the Contractor within such three month period or authorized extension thereof. Upon failure of the Contractor to submit his or her termination claim within the time allowed, the Principal Representative may determine, on the basis of information available to him, the amount, if any, due to the Contractor by reason of the termination and shall thereupon pay to the Contractor the amount so determined.

Costs claimed, agreed to, or determined pursuant to the preceding and following paragraph shall be in accordance with the provisions of § 24-107-101, C.R.S., as amended and associated Cost Principles of the Colorado Procurement Rules as in effect on the date of this Contract.

Subject to the preceding provisions, the Contractor and the Principal Representative may agree upon the whole or any part of the amount or amounts to be paid to the Contractor by reason of the termination under this clause, which amount or amounts may include any reasonable cancellation charges thereby incurred by the Contractor and any reasonable loss upon outstanding commitments for personal services which he or she is unable to cancel; provided, however, that in connection with any outstanding commitments for personal services which the Contractor is unable to cancel, the Contractor shall have exercised reasonable diligence to divert such commitments to other activities and operations. Any such agreement shall be embodied in an Amendment to this Contract and the Contractor shall be paid the agreed amount.

The State may from time to time, under such terms and conditions as it may prescribe, make partial payments against costs incurred by the Contractor in connection with the termination portion of this

Contract, whenever, in the opinion of the Principal Representative, the aggregate of such payments is within the amount to which the Contractor will be entitled hereunder.

The Contractor agrees to transfer title and deliver to the State, in the manner, at the time, and to the extent, if any, directed by the Principal Representative, such information and items which, if the Contract had been completed, would have been required to be furnished to the State, including:

- a. completed or partially completed plans, Drawings and information; and,
- b. materials or equipment produced or in process or acquired in connection with the performance of the work terminated by the Notice.

Other than the above, any termination inventory resulting from the termination of the Contract may, with written approval of the Principal Representative, be sold or acquired by the Contractor under the conditions prescribed by and at a price or prices approved by the Principal Representative. The proceeds of any such disposition shall be applied in reduction of any payments to be made by the State to the Contractor under this Contract or shall otherwise be credited to the price or cost of work covered by this Contract or paid in such other manners as the Principal Representative may direct. Pending final disposition of property arising from the termination, the Contractor agrees to take such action as may be necessary, or as the Principal Representative may direct, for the protection and preservation of the property related to this Contract which is in the possession of the Contractor and in which the State has or may acquire an interest.

Any disputes as to questions of fact, which may arise hereunder, shall be subject to the Remedies provisions of the Colorado Procurement Code, §§ 24-109-101, et seq., C.R.S., as amended.

ARTICLE 51. CONTRACTOR'S RIGHT TO STOP WORK AND/OR TERMINATE CONTRACT

If the Work shall be stopped under an order of any court or other public authority for a period of three (3) months through no act or fault of the Contractor or of any one employed by him, then the Contractor may on seven (7) days' written Notice to the Principal Representative and the Architect/Engineer stop work or terminate this Contract and recover from the Principal Representative payment for all work executed, any losses sustained on any plant or material, and a reasonable profit. If the Architect/Engineer shall fail to issue or otherwise act in writing upon any certificate for payment within ten (10) days after it is presented and received by the Architect/Engineer, as provided in Article 31, Applications For Payments, or if the Principal Representative shall fail to pay the Contractor any sum certified that is not disputed in whole or in part by the Principal Representative in writing to the Contractor and the Architect/Engineer within thirty (30) days after the Architect/Engineer's certification, then the Contractor may on ten (10) days' written Notice to the Principal Representative and the Architect/Engineer stop work and/or give written Notice of intention to terminate this Contract.

If the Principal Representative shall thereafter fail to pay the Contractor any amount certified by the Architect/Engineer and not disputed in writing by the Principal Representative within ten (10) days after receipt of such Notice, then the Contractor may terminate this Contract and recover from the Principal Representative payment for all work executed, any losses sustained upon any plant or materials, and a reasonable profit. The Principal Representative's right to dispute an amount certified by the Architect/Engineer shall not relieve the Principal Representative of the obligation to pay amounts not in dispute as certified by the Architect/Engineer.

ARTICLE 52. SPECIAL PROVISIONS

A. CONTROLLER'S APPROVAL CRS 24-30-202(1)

This Contract shall not be deemed valid until it has been approved by the Colorado State Controller or designee.

B. FUND AVAILABILITY CRS 24-30-202(5.5)

Financial obligations of the State payable after the current fiscal year are contingent upon funds for that purpose being appropriated, budgeted, and otherwise made available

C. GOVERNMENTAL IMMUNITY

No term or condition of this contract shall be construed or interpreted as a waiver, express or implied, of any of the immunities, rights, benefits, protections, or other provisions, of the Colorado Governmental Immunity Act, CRS §24-10-101 et seq., or the Federal Tort Claims Act, 28 U.S.C. §§1346(b) and 2671 et seq., as applicable now or hereafter amended.

D. INDEPENDENT CONTRACTOR 4 CCR 801-2

Contractor shall perform its duties hereunder as an independent contractor and not as an employee. Neither Contractor nor any agent or employee of Contractor shall be deemed to be an agent or employee of the State. Contractor and its employees and agents are not entitled to unemployment insurance or workers compensation benefits through the State and the State shall not pay for or otherwise provide such coverage for Contractor or any of its agents or employees. Unemployment insurance benefits will be available to Contractor and its employees and agents only if such coverage is made available by Contractor or a third party. Contractor shall pay when due all applicable employment taxes and income taxes and local head taxes incurred pursuant to this contract. Contractor shall not have authorization, express or implied, to bind the State to any agreement, liability or understanding, except as expressly set forth herein. Contractor shall (a) provide and keep in force workers' compensation and unemployment compensation insurance in the amounts required by law, (b) provide proof thereof when requested by the State, and (c) be solely responsible for its acts and those of its employees and agents.

E. COMPLIANCE WITH LAW

Contractor shall strictly comply with all applicable federal and State laws, rules, and regulations in effect or hereafter established, including, without limitation, laws applicable to discrimination and unfair employment practices.

F. CHOICE OF LAW

Colorado law, and rules and regulations issued pursuant thereto, shall be applied in the interpretation, execution, and enforcement of this contract. Any provision included or incorporated herein by reference which conflicts with said laws, rules, and regulations shall be null and void. Any provision incorporated herein by reference which purports to negate this or any other Special Provision in whole or in part shall not be valid or enforceable or available in any action at law, whether by way of complaint, defense, or otherwise. Any provision rendered null and void by the operation of this provision shall not invalidate the remainder of this contract, to the extent capable of execution.

G. BINDING ARBITRATION PROHIBITED

The State of Colorado does not agree to binding arbitration by any extra-judicial body or person. Any provision to the contrary in this contract or incorporated herein by reference shall be null and void.

H. SOFTWARE PIRACY PROHIBITION. Governor's Executive Order D 002 00

State or other public funds payable under this contract shall not be used for the acquisition, operation, or maintenance of computer software in violation of federal copyright laws or applicable licensing restrictions. Contractor hereby certifies and warrants that, during the term of this contract and any extensions, Contractor has and shall maintain in place appropriate systems and controls to prevent such improper use of public funds. If the State determines that Contractor is in violation of this provision, the State may exercise any remedy available at law or in equity or under this contract, including, without limitation, immediate termination of this contract and any remedy consistent with federal copyright laws or applicable licensing restrictions.

I. EMPLOYEE FINANCIAL INTEREST/CONFLICT OF INTEREST CRS 24-18-201 & CRS 24-50-507

The signatories aver that to their knowledge, no employee of the State has any personal or beneficial interest whatsoever in the service or property described in this contract. Contractor has no interest and shall not acquire any interest, direct or indirect, that would conflict in any manner or degree with the performance of Contractor's services and Contractor shall not employ any person having such known interests.

J. VENDOR OFFSET CRS 24-30-202(1) & CRS 24-30-202.4

Subject to CRS §24-30-202.4 (3.5), the State Controller may withhold payment under the State's vendor offset intercept system for debts owed to State agencies for: **(a)** unpaid child support debts or child support arrearages; **(b)** unpaid balances of tax, accrued interest, or other charges specified in CRS §39-21-101, et seq.; **(c)** unpaid loans due to the Student Loan Division of the Department of Higher Education; **(d)** amounts required to be paid to the Unemployment Compensation Fund; and **(e)** other unpaid debts owing to the State as a result of final agency determination or judicial action.

K. PUBLIC CONTRACTS FOR SERVICES. CRS §8-17.5-101. [Not Applicable to agreements relating to the offer, issuance, or sale of securities, investment advisory services or fund management services, sponsored projects, intergovernmental agreements, or information technology services or products and services]

Contractor certifies, warrants, and agrees that it does not knowingly employ or contract with an illegal alien who will perform work under this contract and will confirm the employment eligibility of all employees who are newly hired for employment in the United States to perform work under this contract, through participation in the E-Verify Program or the Department program established pursuant to CRS §8-17.5-102(5)(c), Contractor shall not knowingly employ or contract with an illegal alien to perform work under this contract or enter into a contract with a subcontractor that fails to certify to Contractor that the subcontractor shall not knowingly employ or contract with an illegal alien to perform work under this contract. Contractor **(a)** shall not use E-Verify Program or Department program procedures to undertake pre-employment screening of job applicants while this contract is being performed, **(b)** shall notify the subcontractor and the contracting State agency within three days if Contractor has actual knowledge that a subcontractor is employing or contracting with an illegal alien for work under this contract, **(c)** shall terminate the subcontract if a subcontractor does not stop employing or contracting with the illegal alien within three days of receiving the notice, and **(d)** shall comply with reasonable requests made in the course of an investigation, undertaken pursuant to CRS §8-17.5-102(5), by the Colorado Department of Labor and Employment. If Contractor participates in the Department program, Contractor shall deliver to the contracting State agency, Institution of Higher Education or political subdivision a written, notarized affirmation, affirming that Contractor has examined the legal work status of such employee, and shall comply with all of the other requirements of the Department program. If Contractor fails to comply with any requirement of this provision or CRS §8-17.5-101 et seq., the contracting State agency, institution of higher education or political subdivision may terminate this contract for breach and, if so terminated, Contractor shall be liable for damages.

L. PUBLIC CONTRACTS WITH NATURAL PERSONS. CRS §24-76.5-101.

Contractor, if a natural person eighteen (18) years of age or older, hereby swears and affirms under penalty of perjury that he or she **(a)** is a citizen or otherwise lawfully present in the United States pursuant to federal law, **(b)** shall comply with the provisions of CRS §24-76.5-101 et seq., and **(c)** has produced one form of identification required by CRS §24-76.5-103 prior to the effective date of this contract.

ARTICLE 53. MISCELLANEOUS PROVISIONS

A. CONSTRUCTION OF LANGUAGE

The language used in these General Conditions shall be construed as a whole according to its plain meaning, and not strictly for or against any party. Such construction shall, however, construe language to interpret the intent of the parties giving due consideration to the order of precedence noted in Article 2C, Intent of Documents.

B. SEVERABILITY

If any covenant, term, condition, or provision contained in these General Conditions is held by a court of competent jurisdiction to be invalid, illegal, or unenforceable in any respect, such covenant, term, condition, or provision shall be severed or modified to the extent necessary to make it enforceable, and the resulting General Conditions shall remain in full force and effect, and such invalidity or other failure shall not affect the validity of any other covenant, term or provision hereof. Provided the same does not work a substantial injustice, these General Conditions shall be construed as if such invalid portion had not been inserted.

C. SECTION HEADINGS

The section or paragraph headings contained within these General Conditions are inserted for convenience only and shall not be construed to vary or add to the meaning of this Contract.

D. AUTHORITY

Each person executing the Agreement and its Exhibits in a representative capacity expressly represents and warrants that he or she has been duly authorized by one of the parties to execute the Agreement and has authority to bind said party to the terms and conditions hereof.

E. INTEGRATION OF UNDERSTANDING

This Contract is intended as the complete integration of all understandings between the parties and supercedes all prior negotiations, representations, or agreements, whether written or oral. No prior or contemporaneous addition, deletion, or other amendment hereto shall have any force or effect whatsoever, unless embodied herein in writing. No subsequent novation, renewal, addition, deletion, or other amendment hereto shall have any force or effect unless embodied in a written Change Order or Amendment to this Contract.

F. VENUE

The parties agree that venue for any action related to performance of this Contract shall be an appropriate District Court of the State of Colorado.

G. NO THIRD PARTY BENEFICIARIES

Except as herein specifically provided otherwise, this Contract shall inure to the benefit of and be binding upon the parties hereto and their respective successors and assigns. The enforcement of the terms and conditions of this Contract and all rights of action relating to such enforcement, shall be strictly reserved to the parties to the Agreement. Nothing contained in the Contract Documents shall give or allow any claim or right of action whatsoever by any other person or entity as beneficiary; all such non-parties shall be deemed incidental beneficiaries only.

H. WAIVER

The waiver of any breach of a term hereof shall not be construed as a waiver of any other term, of the same term upon subsequent breach.

I. INDEMNIFICATION

Contractor shall indemnify, save, and hold harmless the State, its employees and agents, against any and all claims, damages, liability and court awards including costs, expenses, and attorney fees and related costs, incurred as a result of any act or omission by Contractor, or its employees, agents, subcontractors, or assignees pursuant to the terms of this contract.

J. STATEWIDE CONTRACT MANAGEMENT SYSTEM

If the maximum amount payable to Construction Manager under this Contract is \$500,000 or greater, either on the Effective Date or at anytime thereafter, this section shall apply.

Construction Manager agrees to be governed, and to abide, by the provisions of C.R.S. §24-102-205, §24-102-206, §24-103-601, §24-103.5-101, §24-105-101, §24-105-102, and §24-105-201 concerning the monitoring of vendor performance on state contracts and inclusion of contract performance information in a statewide contract management system.

Construction Manager understands that if the maximum amount payable to Construction Manager under this Contract is \$500,000 or greater, either on the Effective Date or at anytime thereafter, the State shall have the additional responsibility to prepare a Contractor Performance Evaluation Report. This Report shall be maintained as part of the Contractor's file and remain part of CMS for at least 5-years following the Report date.

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Construction Manager's performance shall be subject to Evaluation and Review in accordance with the terms and conditions of this Contract, State law, including C.R.S §24-103.5-101, and State Fiscal Rules, Policies and Guidance. Evaluation and Review of Construction Manager's performance shall be part of the normal contract administration process and Construction Manager's performance will be systematically recorded in the statewide Contract Management System. Areas of Evaluation and Review shall include, but shall not be limited to quality, cost and timeliness. Collection of information relevant to the performance of Construction Manager's obligations under this Contract shall be determined by the specific requirements of such obligations and shall include factors tailored to match the requirements of Construction Manager's obligations. Such performance information shall be entered into the statewide Contract Management System at intervals established herein and a final Evaluation, Review and Rating shall be rendered within 30 days of the end of the **Contract term**. Construction Manager shall be notified following each performance Evaluation and Review, and shall address or correct any identified problem in a timely manner and maintain work progress.

Should the final performance Evaluation and Review determine that Construction Manager demonstrated a gross failure to meet the performance measures established hereunder, the Executive Director of the Colorado Department of Personnel and Administration (Executive Director), upon request by the **[Insert Dept or IHE Acronym]**, and showing of good cause, may debar Construction Manager and prohibit Construction Manager from bidding on future contracts. Construction Manager may contest the final Evaluation, Review and Rating by: (a) filing rebuttal statements, which may result in either removal or correction of the evaluation (CRS §24-105-102(6)), or (b) under CRS §24-105-102(6), exercising the debarment protest and appeal rights provided in CRS §§24-109-106, 107, 201 or 202, which may result in the reversal of the debarment and reinstatement of Construction Manager, by the Executive Director, upon showing of good cause.

ARTICLE 54. OPTIONAL PROVISIONS AND ELECTIONS

The provisions of this Article 54 alter the preceding Articles or enlarge upon them as indicated: The Principal Representative and or the State Buildings Programs shall mark boxes and initial where applicable.

A. MODIFICATION OF ARTICLE 45. GUARANTEE INSPECTIONS AFTER COMPLETION

If the box below is marked the six month guarantee inspection is not required.

_____ Principal Representative initial

B. MODIFICATION OF ARTICLE 27. LABOR AND WAGES

If the box is marked the Federal Davis-Bacon Act shall be applicable to the Project. The minimum wage rates to be paid on the Project shall be furnished by the Principal Representative and included in the Contract Documents.

_____ Principal Representative initial

C. MODIFICATION OF ARTICLE 39. NON-BINDING DISPUTE RESOLUTION – FACILITATED NEGOTIATIONS

If the box is marked, and initialed by the State as noted, the requirement to participate in facilitated negotiations shall be deleted from this Contract. Article 39, Non-Binding Dispute Resolution – Facilitated Negotiations, shall be deleted in its entirety and all references to the right to the same where ever they appear in the contract shall be similarly deleted.

The box may be marked only for projects with an estimated value of less than \$500,000.

_____ Principal Representative initial

D. MODIFICATION OF ARTICLE 46. TIME OF COMPLETION AND LIQUIDATED DAMAGES

If an amount is indicated immediately below, liquidated damages shall be applicable to this Project as, and to, the extent shown below. Where an amount is indicated below, liquidated damages shall be assessed in accordance with and pursuant to the terms of Article 46, Time Of Completion And Liquidated Damages, in the amounts and as here indicated. The election of liquidated damages shall limit and control the parties right to damages only to the extent noted.

1. For the inability to use the Project, for each day after the number of calendar days specified in the Contractor's bid for the Project and the Agreement for achievement of Substantial Completion, until the day that the Project has achieved Substantial Completion and the Notice of Substantial Completion is issued, the Contractor agrees that an amount equal to Two Hundred Fifty and no/100 Dollars (\$250.00) shall be assessed against Contractor from amounts due and payable to the Contractor under the Contract, or the Contractor and the Contractor's Surety shall pay to the Principal Representative such sum for any deficiency, if amounts on account thereof are deducted from remaining amounts due, but amounts remaining are insufficient to cover the entire assessment.

2. For damages related to or arising from additional administrative, technical, supervisory and professional expenses related to and arising from the extended closeout period, for each day in excess of the number of calendar days specified in the Contractor's bid for the Project and the Agreement to finally complete the Project as defined by the issuance of the Notice of Final Acceptance) after the issuance of the final Notice of Substantial Completion, the Contractor agrees that an amount equal to One Hundred Fifty and no/100 Dollars (\$150.00) shall be assessed against Contractor from amounts due and payable to the Contractor under the Contract, or the Contractor and the Contractor's Surety shall pay to the Principal Representative such sum for any deficiency, if amounts on account thereof are deducted from remaining amounts due but amounts remaining are insufficient to cover the entire assessment.

E. NOTICE IDENTIFICATION

All Notices pertaining to General Conditions or otherwise required to be given shall be transmitted in writing, to the individuals at the addresses listed below, and shall be deemed duly given when received by the parties at their addresses below or any subsequent persons or addresses provided to the other party in writing.

Notice to Principal Representative: _____

With copies to: State Buildings Programs (or Delegate)
State of Colorado

Notice to Contractor: _____

With copies to: _____

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Supplementary General Conditions
University of Colorado at Boulder

1. **GENERAL CONDITIONS, ARTICLE 23. F. SIGN – DELETE the entire section.**

2. **GENERAL CONDITIONS, ARTICLE 25 INSURANCE - DELETE the entire section and replace with the following:**

The Contractor shall obtain and maintain, at its own expense and for the duration of the contract, the minimum insurance coverages set forth below. By requiring such minimum insurance, the University shall not be deemed or construed to have assessed the risk that may be applicable to the Contractor under this contract. The Contractor shall assess its own risks and if it deems appropriate and/or prudent, maintain higher limits and/or broader coverages. The Contractor is not relieved of any liability or other obligations assumed or pursuant to the Contract by reason of its failure to obtain or maintain insurance in sufficient amounts, duration, or types.

COVERAGES

1. **Commercial General Liability – ISO CG 00001 or equivalent. Coverage to include:**
 - Premises and Operations
 - Explosions, Collapse and Underground Hazards
 - Personal / Advertising Injury
 - Products / Completed Operations
 - Liability assumed under an Insured Contract (including defense costs assumed under contract)
 - Broad Form Property Damage
 - Independent Contractors
 - Designated Construction Projects(s) General Aggregate Limit, ISO CG 2503 (1997 Edition)
 - Additional Insured—Owners, Lessees or Contractors Endorsement, ISO Form 2010 (2004 Edition or equivalent), if possible.
 - Additional Insured—Owners, Lessees or Contractors Endorsement, ISO CG 2037 (7/2004 Edition or equivalent), if possible.

2. **Automobile Liability including all:**
 - Owned Vehicles
 - Non-Owned Vehicles
 - Hired Vehicles

3. **Excess/Umbrella Liability (Applies to projects totaling \$10,000,000 or more)**
 - Excess of Commercial General Liability, Automobile Liability, and Employers' Liability.
 - Coverages should be as broad as primary.
 - Risk Management reserves the right to require higher limits.

4. **Workers Compensation**
 - Statutory Benefits (Coverage A)
 - Employers Liability (Coverage B)

5. **Builder's Risk Completed Value (Applies to buildings additions and new buildings)**
 - See Builders Risk section in this document.

6. **Installation Floater**
 - Special cause of loss
 - Theft
 - Faulty workmanship
 - Vandalism
 - Labor costs to repair damaged work

7. **Contractors Pollution Liability**

This section applies only to the following types of proposals:

- ASBESTOS/LEAD ABATEMENT Contracting Services

The University requires this coverage whenever work at issue under this contract involves potential pollution risk to the environment or losses caused by pollution conditions (including asbestos) that may arise from the operations of the Contractor described in the Contractor's scope of services. Policy shall cover the Contractors completed operations. Such coverage shall include:

- Bodily Injury, sickness, disease, mental anguish or shock sustained by any person, including death.
- Property Damage including natural resource damages, physical injury to or destruction of tangible property including resulting loss of use, clean up costs, and the loss of use of tangible property that has not been physically injured or destroyed.
- Defense, including costs, charges and expenses incurred in the investigation, adjustment or defense of claims for such compensatory damages.
- Cleanup costs, removal, storage, disposal, and or use of the pollutant; and defense, including costs and expenses incurred in the investigation, defense, or settlement of claims.
- Coverage shall apply to sudden and gradual pollution conditions resulting from the escape or release of smoke, vapors, fumes, acids, alkalis, toxic chemicals, liquids, or gases, natural gas, waste materials, or other irritants, contaminants, or pollutants (including asbestos). If the coverage is written on a claims-made basis, the Contractor warrants that any retroactive date applicable to coverage under the policy precedes the effective date of this contract; and that continuous coverage will be maintained or an extended discovery period will be exercised for a period of three (or specify desired number) years beginning from the time that work under this contract is completed.
- On the Automobile Liability Coverage endorsements CA9948 and MCS-90 are required if the Contractor is transporting any type of hazardous materials.
- **The Regents of the University of Colorado, a body corporate as "Additional Insured"** for work that is being performed by the Contractor and as respects the Contractors Pollution Liability.

LIMITS REQUIRED

The Contractor shall carry the following limits of liability as required below:

Commercial General Liability

General Aggregate	\$2,000,000
Products/Completed Operations Aggregate	\$2,000,000
Each Occurrence Limit	\$1,000,000
Personal/Advertising Injury	\$1,000,000
Fire Damage (Any One Fire)	\$ 50,000
Medical Payments (Any One Person)	\$ 5,000

Excess/Umbrella Liability (as required-See Coverages #3)

General Aggregate Limit	\$5,000,000
Products/Completed Operations Aggregate	\$5,000,000

Automobile Liability

Bodily Injury/Property Damage (Each Accident)	\$1,000,000
---	-------------

Workers' Compensation

Coverage A (Workers' Compensation)	Statutory
Coverage B (Employers Liability)	\$ 100,000 Each Accident
	\$ 100,000 Disease Ea. Employ
	\$ 500,000 Disease-Policy Limit

Contractors Pollution Liability (as required-See Coverages #7)

Per Loss	\$1,000,000
Aggregate	\$1,000,000

Builder's Risk (as required-See Coverages #5)

- This coverage is required for new buildings or additions to existing buildings.
- **See the Builders Risk section (below)** for required terms and conditions.

Installation Floater

This coverage is to cover materials and equipment to be installed in existing structures.

- Shall be written for 100% of the completed value (replacement cost basis)
- Deductible maximum is \$10,000.00
- Waiver of Subrogation applies on Builders Risk

ADDITIONAL INSURANCE REQUIREMENTS

1. All insurers must be licensed or approved to do business within the State of Colorado, and unless otherwise specified, all policies must be written on a per occurrence basis.
2. The Contractor shall provide the University of Colorado a Certificate of Insurance Form evidencing all required coverages, prior to commencing work or entering University premises.
3. The Contractor shall name **“The State of Colorado and The Regents of the University of Colorado, a body corporate” as an Additional Insured as respects General Liability.**
4. Upon request by the University, Contractor must provide a copy of the actual insurance policy effecting coverage(s) required by the contract.
5. The University requires that all policies of insurance be written on a primary basis, non-contributory with any other insurance coverages and/or self-insurance carried by the University.
6. A Separation of Insureds Clause must be included in general liability policies.
7. The Contractor shall advise the University in the event any general aggregate or other aggregate limits are reduced below the required per occurrence limit. At their own expense, the Contractor will reinstate the aggregate limits to comply with the minimum requirements and shall furnish to the University a new certificate of insurance showing such coverage is in force.
8. Contractor's insurance carrier should possess a minimum A.M. Best's Insurance Guide rating of A-VI.
9. Commercial General Liability Completed Operations policies must be kept in effect for up to three (3) years after completion of the project.
10. Contractors Pollution Liability policies must be kept in effect for up to three (3) years after completion of the project.
11. Provide a minimum of thirty (30) days advance written notice to the University for cancellation, non-renewal, or material changes to policies required under the contract.
12. Certificate Holder: University of Colorado, University Risk Management, 4001 Discovery Drive, Suite 230, Campus Box 587, Boulder, CO 80303

Failure of the Contractor to fully comply with these requirements during the term of the Contract may be considered a material breach of contract and may be cause for immediate termination of the Contract at the option of the University. The University reserves the right to negotiate additional specific insurance requirements at the time of the contract award.

Non-Waiver

The parties hereto understand and agree that The University is relying on, and does not waive or intend to waive by any provision of this Contract, the monetary limitations or any other rights, immunities, and protections provided by the Colorado Governmental Immunity Act, 24-10-101 et seq., as from time to time amended, or otherwise available to the University or its officers, employees, agents, and volunteers.

Mutual Cooperation

The University and Contractor shall cooperate with each other in the collection of any insurance proceeds which may be payable in the event of any loss, including the execution and delivery of any proof of loss or other actions required to effect recovery.

Builder's Risk Insurance
(As required-See Coverages #5)

Unless otherwise provided, the Contractor shall purchase and maintain, in a company or companies lawfully authorized to do business in the jurisdiction in which the project is located, Builder's Risk Insurance in the amount of the initial contract amount as well as subsequent modifications for the entire project at the site on a replacement cost basis without voluntary deductibles. Such Builder's Risk Insurance shall be maintained, unless otherwise provided in the contract documents or otherwise agreed in writing by all persons and entities who are beneficiaries of such insurance, until final payment has been made or until no person or entity other than the University has insurable interest in the property to be covered, whichever is earlier. The Builder's Risk insurance shall include interests of the University of Colorado, the General Contractor, subcontractors and sub-tier contractors in the project.

Builders' Risk Coverage shall be on a Special Covered Cause of Loss Form and shall include theft, vandalism, malicious mischief, collapse, false-work, temporary buildings and debris removal including demolition, increased cost of construction, architect's fees and expenses, flood and earthquake, and all below and above ground structures, water and sewer mains. Other coverages may be required if provided in contract documents. Coverages shall be written for 100% of the completed value (replacement cost basis) of the work being performed. At the option of the University of Colorado, the University of Colorado may include Soft Costs (including Loss of Use)/Delay in Opening Endorsement under the builder's risk policy. The University of Colorado agrees to provide the necessary exposure base information for quotation by the Builder's Risk carrier. The University of Colorado agrees to pay the premium associated with the Soft Costs coverage, the University of Colorado decides to purchase this coverage.

The Builder's Risk shall also include the follow amendments/provisions:

- Waiver of Subrogation against all parties named as insured, but only to the extent the loss is covered.
- Beneficial Occupancy Clause. The policy shall specifically permit partial or beneficial occupancy at or before substantial completion or final acceptance of the entire work. Partial occupancy or use of the work shall not commence until the insurance company or companies providing insurance have consented to such partial occupancy or use. The University of Colorado and Contractor shall take reasonable steps to obtain consent of the insurance company or companies and agree to take no action, other than upon mutual written consent, with respect to occupancy or use of the work that could lead to cancellation, lapse or reduction of insurance.
- Equipment Breakdown Coverage (a.k.a. Boiler & Machinery) required by the Contract Documents or by law, which shall specifically cover insured equipment during installation and testing (including hot testing).
- Deletion of Coinsurance Provisions
- Replacement Costs Basis - including modification of the valuation clause to cover all costs needed to repair the structure or work (including overhead and profits) and will pay based on the values figured at the time of rebuilding or repairing, not at the time of loss

- Deletion of any exclusions pertaining to Law, Ordinance or Regulation
- Deletion of exclusions for design errors & omissions
- Modification of the electrical apparatus breakdown exclusions and the mechanical breakdown exclusion so that it does not apply to subsequent loss or damage
- Modify exclusion pertaining to damage to interior of building caused by an perils insured against are covered
- Resultant Damage Extension including amendment of exclusion pertaining to design error
- Settling, cracking, shrinking or expansion (including coverage for loss resulting from settling, cracking, shrinking or expansion) of foundation walls, floors, or other parts of the structure
- Other coverages may be required if provided in Contract Documents
- The deductible shall not exceed \$10,000 and shall be the responsibility of the Contractor except for losses that involve all Acts of God such as flood, earthquake, windstorm, tsunami, volcano, etc.
- The Policy shall be amended to show thirty (30) days notice of cancellation. Such notice shall be given to the University of Colorado and Contractor.
- Losses in excess of \$10,000 insured shall be adjusted in conjunction with the University of Colorado. Any insurance payments/proceeds shall be made payable to the University of Colorado subject to requirements of any applicable mortgagee clause. The Contractor shall pay subcontractors their just shares of insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require subcontractors to make payments to their sub-subcontractors in similar manner.
- The University of Colorado shall have the authority to adjust and settle any losses in excess of \$10,000 with insurers unless one of the parties in interest shall object in writing within five days after occurrence of loss to the University of Colorado exercise of this power. It is expressly agreed that nothing in this section shall be subject to arbitration and any references to arbitration are expressly deleted.

If requested, the Contractor shall file with the University of Colorado a copy of the policy that includes the insurance coverages required in this section. The policy shall contain all generally applicable conditions, definitions, exclusions and endorsements related to the Project.

If the Contractor does not intend to purchase such Builder's Risk Insurance required by the Contract and with all of the coverages in the amount described above, the Contractor shall so inform the University of Colorado as stated in writing prior to commencement of the work. The University of Colorado may then effect insurance that will protect the interests of the University of Colorado, the General Contractor, Subcontractors and sub-tier contractors in the project. Coverages applying shall be the same as stated above including other coverages that may be required by the University of Colorado. The cost shall be charged to the Contractor. Coverage shall be written for 100% of the completed value of the work being performed, with a deductible not to exceed \$10,000 per occurrence for most projects.

All deductibles will be assumed by the Contractor. Waiver of Subrogation is to apply against all parties named as insureds, but only to the extent the loss is covered, and Beneficial Occupancy Endorsements are to apply.

If the University of Colorado is damaged by the failure or neglect of the Contractor to purchase or maintain insurance as described above, without so notifying the University of Colorado, then the Contractor shall bear all reasonable costs properly attributable thereto.

Contractors engaged in modifications of existing structures are required to secure a Beneficial Occupancy Endorsement that enables the University of Colorado to occupy the facility during construction.

Revised 02/20/06



STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAMS

CHANGE ORDER BULLETIN

Change Order Bulletin No: _____ Date _____

Contractor: _____

Institution or Agency: University of Colorado at Boulder

Project No./Name: PR 004877 – EVNT: Main Event Area – Install Video Boards

Description of Work: _____

This bulletin is issued to define the scope of revision in drawings and/or specifications for a contemplated change order. The work called for by these revisions shall be in accordance with the requirements of the original contract documents.

Please prepare and submit a proposal for the changes described below. For pricing use State Form SC-6.312. A formal change order State Form SC-6.31 will be issued after approval of your proposal by the Principal Representative and the Architect. Your proposal shall include a statement as to the effect this change will have on the time for completion of the project.

This bulletin is **NOT** an authorization to proceed.

DESCRIPTION OF CHANGE:

SPECIFICATION REVISIONS:

STATUS OF EXISTING WORK:

PREPARED BY: _____
ARCHITECT/ENGINEER OR CONTRACTOR

APPROVED BY: _____

PRINCIPAL REPRESENTATIVE
(INSTITUTION or AGENCY)



STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAMS
CHANGE ORDER PROPOSAL

Change Order Proposal No. _____ Date _____

Reference
Change Order Bulletin No: _____ Date _____

Contractor

University of Colorado at Boulder
Institution or Agency
PR 004877 – EVNT: Main Event Area – Install Video Boards
Project No./Name

Description of Work:

(Before completing this form, read instructions on reverse side.)

PART I - WORK PERFORMED BY CONTRACTOR

Line 1. Direct Labor Costs..... \$ _____
Line 2. Labor Overhead (Direct Labor Burdens) (_____ % X Line 1)..... \$ _____
Line 3. Total Contractor's Labor Costs (Lines 1 and 2)..... \$ _____
Line 4. Direct Materials Costs..... \$ _____
Line 5. Materials Overhead (Delivery Costs & Taxes) (_____ % X Line 4)..... \$ _____
Line 6. Total Materials Costs (Lines 4 and 5)..... \$ _____
Line 7. Total Equipment Costs..... \$ _____
Line 8. PART I - TOTAL CONTRACTOR'S L, M & E COSTS (Lines 3, 6 and 7).....Part I \$ _____

PART II - WORK PERFORMED BY SUBCONTRACTOR

Line 9. Direct Labor Costs..... \$ _____
Line 10. Labor Overhead (Direct Labor Burdens) (_____ % X Line 9)..... \$ _____
Line 11. Total Subcontractor's Labor Cost (Lines 9 and 10)..... \$ _____
Line 12. Direct Materials Costs..... \$ _____
Line 13. Materials Overhead (Delivery Costs & Taxes) (_____ % X Line 12)..... \$ _____
Line 14. Total Subcontractor's Materials Costs (Lines 12 and 13)..... \$ _____
Line 15. Total Subcontractor's Equipment Costs..... \$ _____
Line 16. Total Subcontractor's L, M & E Costs (Lines 11, 14 and 15)..... \$ _____
Line 17. Subcontractor's Overhead (Indirect Costs), (10 % X Line 16)..... \$ _____
Line 18. Subcontractor's Profit (5 % X Line 16) or (2 1/2 % Deduct)..... \$ _____
Line 19. PART II - TOTAL SUBCONTRACTOR'S COSTS (Lines 16, 17 and 18).....Part II \$ _____

PART III - CONTRACTOR'S OVERHEAD & PROFIT

Line 20. Contractor's Overhead (Indirect Costs), (10 % X Part I Total)..... \$ _____
Line 21. Contractor's Profit (5 % X Part I Total)..... \$ _____
Line 22. PART III - TOTAL CONTRACTOR OVERHEAD & PROFIT (Lines 20 and 21).....Part III \$ _____

PART IV - CONTRACTOR'S MARKUP ON SUBCONTRACTOR

Line 23. Contractor's Commission on Subcontractor (5 % X Part II Total)..... \$ _____
Line 24. Contractor's Profit on Subcontractor (5 % X Part II Total) or (2 1/2 % Deduct) \$ _____
Line 25. PART IV - TOTAL CONTRACTOR MARKUP ON SUBCONTRACTOR (Lines 23 & 24).....Part IV \$ _____

PART V - SUBTOTAL C.O. PROPOSAL (Parts I and II and III and IV).....Part V (Subtotal) \$ _____

PART VI - CONTRACTOR'S BOND COST (_____ % X Part V).....Part VI \$ _____

PART VII - GRAND TOTAL CHANGE ORDER PROPOSAL (Sum of Totals: Parts V and VI).....Grand Total \$ _____

PART VIII - CONTRACT TIME

COMPLETION DATE (IS) (IS NOT) EXTENDED _____ CALENDAR DAYS AS A RESULT OF THIS PROPOSAL.

CONTRACTOR'S CERTIFICATE:

This is to certify that, to the best of my knowledge and belief, the cost/price data submitted in response to the listed C.O. Bulletin, are accurate, complete and current as of _____ 20 _____

ARCHITECT/ENGINEER'S CERTIFICATE:

This is to certify that I have analyzed the proposal and find, to the best of my knowledge and belief, that the proposal represents current, fair, factual and competitive cost/price data.

Firm: _____

Firm: _____

Name & Title: _____

Name & title: _____

Signature: _____

Signature: _____

*Date: _____

Date: _____

*The proposal shall remain in full force and effect for a period of _____ calendar days from date of signature.

PRINCIPAL REPRESENTATIVE

(Institution or Agency)

STATE BUILDINGS PROGRAMS

(or Authorized Delegate)

Date _____

Date _____

**INSTRUCTIONS FOR COMPLETING "CHANGE ORDER PROPOSAL"
COST/PRICE DATA SUMMARY (STATE FORM SC-6.312)**

BULLETIN NUMBER/DATED: Insert C.O. Bulletin No. and Date Issued
 LEFT HAND BOX: Fill in Contractor's Name; State Project Number and Title
 RIGHT HAND BOX: Fill in Description of Changes from Bulletin, noting **exceptions** that are listed in the Bulletin but are excluded; i.e., not priced on this form.

PART I - WORK PERFORMED BY CONTRACTOR:

Line 1. Direct Labor Costs: Fill in subtotal of direct labor costs, which includes base rates plus applicable fringe benefits.
 On Contractor's letterhead/spreadsheet show costs as follows:

Trade	Rate	X	Hours	=	\$	Extended Costs
_____	\$ _____	X	_____	=	\$ _____	_____
_____	\$ _____	X	_____	=	\$ _____	_____
					Direct Labor Costs	= \$ _____

Line 2. Labor Overhead (Direct Labor Burdens, etc.): Fill in as a percentage of Line 1.
 Line 3. Total Labor Costs: Fill in Total of Lines 1 and 2.
 Line 4. Direct Materials Costs: Fill in subtotal of direct materials costs. Provide quotes or invoices.
 On letterhead/spreadsheet, show direct materials costs as follows:

Materials	Units	X	Unit Cost	=	\$	Extended Costs
_____	\$ _____	X	_____	=	\$ _____	_____
_____	\$ _____	X	_____	=	\$ _____	_____
					Direct Materials Costs	= \$ _____

Line 5. Materials Overhead: Fill in as percentage cost of Line 4. Overhead costs include delivery, taxes, insurance costs, etc. (As mutually agreed upon at contract signing)
 Line 6. Total Materials Costs: Fill in total of lines 4 and 5.
 Line 7. Total Equipment Costs: Fill in total equipment costs including indirect overhead costs in hourly rate - except indirect labor costs.
 On letterhead/spreadsheet show total equipment costs as follows:

Description	Rate	X	Hours	=	\$	Extended Costs
_____	\$ _____	X	_____	=	\$ _____	_____
_____	\$ _____	X	_____	=	\$ _____	_____
					Total Equipment Cost	= \$ _____

Line 8. Total Contractor's Labor, Materials & Equipment (LM & E) Costs: Add Lines 3, 6 and 7.

PART II - WORK PERFORMED BY SUBCONTRACTOR:

Line 9. Direct Labor Costs: Fill in subtotal of direct labor costs, which includes base rates plus applicable fringe benefits.
 On Subcontractor's letterhead/spreadsheet show costs by trade, rate, hours and extended costs. See Instructions for line 1.
 Line 10. Labor Overhead (Direct Labor Burdens, etc.): Fill in as a percentage of Line 9.
 Line 11. Total Subcontractor's Labor Costs: Fill in Total of lines 9 and 10.
 Line 12. Direct Material Costs: Fill in subtotal of direct materials costs. Provide quotes or invoices.
 On letterhead/spreadsheet, show direct materials costs by materials, units, unit costs and extended costs. See Instructions for line 4.
 Line 13. Materials Overhead: Fill in as a percentage of line 12. Overhead costs include delivery, taxes, insurance costs, etc.
 Line 14. Total Subcontractor's Materials Costs: Fill in Total of lines 12 and 13.
 Line 15. Total Subcontractor's Equipment Costs: Fill in total equipment costs including indirect overhead costs in hourly rate - except indirect labor costs. On letterhead/spreadsheet show total equipment costs by description, rate, hours and extended costs. See Instructions for line 7.
 Line 16. Total Subcontractor's Labor, Materials and Equipment (L, M & E) Costs: Fill in total of lines 11, 14 and 15.
 Line 17. Subcontractor's Overhead (Indirect Costs): Fill in as percentage cost of line 16. See Article 35 of General Conditions.
 Line 18. Subcontractor's Profit: Fill in as percentage cost of line 16. See Article 35 of General Conditions.
 Line 19. Total Subcontractor's Costs: Fill in total of lines 16, 17 and 18.

PARTS III THROUGH VIII - Self-explanatory.

CERTIFICATIONS

- A. The Contractor, who prepares this proposal form, certifies the cost/price data by signing, dating, and forwarding same to the Architect/Engineer (or Consultant) for further action.
- B. The Architect/Engineer (or Consultant) reviews and analyzes the cost/price data for the requirements that these are: 1) currently prevalent, 2) reasonably fair, 3) factually applicable, and 4) equivalently competitive market selling prices. The Architect/Engineer (or Consultant) may negotiate--after receipt of the cost proposal--any or all of the cost elements of the proposal to support a recommendation of acceptance to the Principal Representative. Certification by the A/E (or Consultant) of the above requirements is made upon his signature. The Architect/Engineer (or Consultant) forwards the proposal with the supporting back-up to the Agency.
- C. Authority for the Institution or Agency (usually the Principal Representative) reviews the proposal, signs, dates, and forwards to State Buildings Programs or Delegate for final action.
- D. State Buildings Programs or Delegate reviews the cost proposal, with all supporting back-up, for technical and procedural requirements and, if in order, signs and dates the proposal.



STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAMS

CHANGE ORDER

Change Order No: _____ Date _____

Contractor: _____

Institution or Agency: University of Colorado at Boulder

Project No./Name: PR 004877 – EVNT: Main Event Area – Install Video Boards

Your Change Order Proposal(s), dated _____ is/are hereby being designated for approval of the following work:

(Note: If more space is needed for description of work, attach additional 8-1/2" x 11" sheets hereto.)

This change order was originated by the Contractor , Architect/Engineer , State , and I/We do hereby recommend acceptance and approval of the change to the Contractor's Agreement Dated _____ which is by this reference, made a part hereof, and identified as Exhibit _____ with an increase , a decrease , no change , of \$_____.

Contract completion date is extended _____ days , is not extended . New completion date is _____ (Month/Day/Year)

*Persons signing for Architect/Engineer/Contractor hereby swear and affirm that they are authorized to act on Architect/Engineer/Contractor's behalf and acknowledge that the State is relying on their representations to that effect. **Principal is not a recognized title and will not be accepted.**

Architect/Engineer Firm	Name and Title (print)	Date
	Signature	
Contractor (Name of Firm)	Name and Title (print)	Date
	Signature	
<u>University of Colorado at Boulder</u> Institution or Agency	Ronald L. Ried, Director, Business Services Principal Representative	Date

CONTRACT STATUS		
Original Contract Value	\$ _____	
Previous increases by CO/Amend	\$ _____	
Previous decreases by CO/Amend	\$ _____	
Value After Prior CO's/Amend	\$ _____	
This CO/Amend		
Increases <input type="checkbox"/>	Decreases <input type="checkbox"/>	\$ _____
CURRENT CONTRACT VALUE	\$ _____	
		STATE BUILDINGS PROGRAMS (or Authorized Delegate) Paul M. Leef, AIA, LEED™ AP Campus Architect & Director, Planning, Design & Construction
		STATE CONTROLLER (or Authorized Delegate) Steve McNally, Associate Vice Chancellor & Controller
		(Verification)

REQUEST FOR INFORMATION
(RFI # 01)

Project No.. Project Name: PR 004877 – EVNT: Main Event Area – Install Video Boards

Date: _____

To: _____

From: _____

Sent Via: _____

Drawing Ref.: _____ **Spec. Ref.:** _____

Subject:

Proposed Solution:

	NO	YES
Schedule Impact:	<input type="checkbox"/>	<input type="checkbox"/>
Cost Impact:	<input type="checkbox"/>	<input type="checkbox"/>

I _____
Estimated Cost _____

Date Response Required _____ **Sent Via:** E-mail

Signature: _____ **Company:** _____

Response:

Response Date: _____ **Sent Via:** _____

Person Responding: _____ **Signature:** _____

Further Action Required:

Other Documents This RFI Refers to:

<u>Letters</u>	<u>RFP</u>	<u>PCO</u>	<u>CO</u>	<u>Other</u>



University of Colorado at Boulder
 ENVIRONMENTAL HEALTH AND SAFETY
 413 UCB, (303) 492-6025, Fax (303) 492-2854

ENVIRONMENTAL SITE ASSESSMENT FORM

Building & Location CAMP_	Job Description Description of work that will be done	Work Order / Project Number MY010905
---	---	--

Follow-up required for: ASBESTOS MATERIALS RADIOACTIVE MATERIALS ENVIRONMENTAL COMPLIANCE LEAD MATERIALS LASER OR X-RAY HAZARDOUS MATERIALS NONE FOUND	Suspect Building Components, Materials, and Site Conditions: Lists all suspect materials for asbestos and/or lead-based paint. Also describes any other environmental and safety conditions, e.g. laboratory, hazardous materials, radiation issues, etc. Will address other conditions of the building being worked in, e.g. classroom, offices, laboratories, or other uses. SAMPLE REPORT ONLY
--	---

Samples / Results: Lists all know results of suspect materials or environmental monitoring results. Where suspect materials are not known, lists these as presumed positive. SAMPLE REPORT ONLY

REQUIRED ACTION: Identifies any action that may be required by all parties for the project, conditions that shall be followed, and all other notations relevant to the project. Explains further steps that must be taken for the project and responsibilities of key project staff, e.g. Project Managers, Contractors, EH&S, etc. SAMPLE REPORT ONLY
--

EH&S Inspector: Certified CDPHE Inspector Date Inspected: 1/9/2005

EH&S Manager: Michael Yanker Date Reviewed: 1/9/2005

This report based upon conditions, regulations, policies at time of inspection and is valid for 90 days. Changing scope of work requires re-inspection. If areas contain hazardous materials (asbestos, chemicals, gases, bio-hazards, radioactive materials or radiation) and/or involve laboratories, shops, haz exhausts, tanks, sewer drains or traps, storm or surface water, or other occupational hazards, work must be coordinated with appropriate EH&S manager. No new materials containing asbestos may be used for any part of the construction project. Project must conform with all applicable codes & standards. Project Rep must submit to EH&S Env Compliance - comprehensive haz materials/chemical inventory used to determine additional requirements. Contractor and/or Project Rep must provide above information to employees, subcontractors and other relevant parties.

University Representative / Project Manager	Phone Number:
Contractor Name: Contractor	Phone Number:
Contractor Representative: (signature) Foreman or Superintendant	Date Signed:



STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAMS

NOTICE TO PROCEED (DESIGN/BID/BUILD CONTRACT)

Date of Notice: _____
Date to be inserted by the Principal Representative
 Date/Description of Contract Documents: _____
 Institution/Agency: University of Colorado at Boulder
 Project No./Name: PR 004877 – EVNT: Main Event Area – Install Video Boards

~~Attach Notice of Code Compliance from Code Review Agent/Building Official for Documents Listed Above~~

To:

This is to advise you that your Performance Bond, Labor and Material Payment Bond, the requisite Builder's Risk Insurance Policy or Certificate for same, and Certificates of Insurance have been received. Our issuance of this Notice does not relieve you of responsibility to assure that the bond and insurance requirements of the Contract Documents are met for the duration of the Agreement. The Agreement dated _____ covering the above described work has been fully executed.

You are hereby authorized and directed to proceed within ten (10) days from date of this Notice as required in the Agreement. Any liquidated damages for failure to achieve substantial completion by the date agreed that may be applicable to this contract will be calculated using the date of this Notice for the date of the commencement of the Work.

Actual on-site construction may not commence until all applicable building permits have been obtained by the Contractor.

By _____ Date _____
 State Buildings Programs
 (or Authorized Delegate)
 Paul M. Leef, AIA, LEED™ AP
 Campus Architect &
 Director, Planning, Design & Construction

By _____ Date _____
 Principal Representative
 (Institution or Agency)
 Ronald L. Ried, Director
 Facilities Management Business Services

When completely executed, this form is to be sent by certified mail to the Contractor by the Principal Representative.



OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAMS
CERTIFICATION AND AFFIDAVIT REGARDING UNAUTHORIZED IMMIGRANTS

Institution/Agency: University of Colorado at Boulder

Project No./Name: PR 004877 – EVNT: Main Event Area – Install Video Boards

A. CERTIFICATION STATEMENT CRS 8-17.5-101 & 102 (HB 06-1343, SB 08-193)

The Vendor, whose name and signature appear below, certifies and agrees as follows:

1. The Vendor shall comply with the provisions of CRS 8-17.5-101 et seq. The Vendor shall not knowingly employ or contract with an unauthorized immigrant to perform work for the State or enter into a contract with a subcontractor that knowingly employs or contracts with an unauthorized immigrant.
2. The Vendor certifies that it does not now knowingly employ or contract with an unauthorized immigrant who will perform work under this contract, and that it will participate in either (i) the "E-Verify Program", jointly administered by the United States Department of Homeland Security and the Social Security Administration, or (ii) the "Department Program" administered by the Colorado Department of Labor and Employment in order to confirm the employment eligibility of all employees who are newly hired to perform work under this contract.
3. The Vendor shall comply with all reasonable requests made in the course of an investigation under CRS 8-17.5-102 by the Colorado Department of Labor and Employment. If the Vendor fails to comply with any requirement of this provision or CRS 8-17.5-101 et seq., the State may terminate work for breach and the Vendor shall be liable for damages to the State.

B. AFFIDAVIT CRS 24-76.5-101 (HB 06S-1023)

4. If the Vendor is a sole proprietor, the undersigned hereby swears or affirms under penalty of perjury under the laws of the State of Colorado that (check one):

- I am a United States citizen, or
- I am a Permanent Resident of the United States, or
- I am lawfully present in the United States pursuant to Federal law.

I understand that this sworn statement is required by law because I am a sole proprietor entering into a contract to perform work for the State of Colorado. I understand that state law requires me to provide proof that I am lawfully present in the United States prior to starting work for the State. I further acknowledge that I will comply with the requirements of CRS 24-76.5-101 et seq. and will produce the required form of identification prior to starting work. I acknowledge that making a false, fictitious, or fraudulent statement or representation in this sworn affidavit is punishable under the criminal laws of Colorado as perjury in the second degree under CRS 18-8-503 and it shall constitute a separate criminal offense each time a public benefit is fraudulently received.

CERTIFIED and AGREED to this _____ day of _____, 2010.

VENDOR:

Vendor Full Legal Name

BY: _____
Signature of Authorized Representative

Title



STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAMS

NOTICE OF SUBSTANTIAL COMPLETION

Date of Substantial Completion: _____
Date to be inserted by the Principal Representative

Institution/Agency: University of Colorado at Boulder

Project No./Name: PR 004877 – EVNT: Main Event Area – Install Video Boards

TO: **Lonnie Greim**, Project Manager
University of Colorado at Boulder
Department of Facilities Management
Campus Box 453 UCB
Boulder, CO 80309-0453
(Principal Representative)

And
(Contractor)

This is to advise you that the Work has been reviewed, inspected and determined, to the best knowledge, information and belief of the Architect/Engineer, to be substantially complete as of the date noted above in accordance with the criteria outlined in Article 41 of The General Conditions of the Contract and the Specifications, including without limitation a) suitable for occupancy, b) inspected for code compliance with ~~Building Inspection Records signed by code officials for the State~~, *Inspection Cards completely signed-off or a Temporary Certificate, or Certificate, of Occupancy has been issued*, c) determined to be fully and comfortably usable, and d) fully cleaned and appropriate for presentation to the public.

A punch list of work to be completed, work not in compliance with the Drawings or Specifications, and unsatisfactory work is attached hereto, along with the Contractor's schedule for the completion of each and every item identified on the punch list specifying the Subcontractor or trade responsible for the work, and the dates the completion or correction will be commenced and finished within any period indicated in the Agreement for punch list completion prior to Final Acceptance.

Except as stated on the reverse side of this Notice of Substantial Completion, all manufacturers' warranties, other special warranties and the Contractor's one-year obligation to perform remedial work, shall commence on the Date of Substantial Completion noted above.

This Notice of Substantial Completion shall be effective and establish the Date of Substantial Completion only when fully executed on the reverse by the Contractor and the Principal Representative. The Principal Representative accepts the Work as substantially complete as of the Date of Substantial Completion herein noted. The Contractor agrees to complete or correct the Work identified on the attached punch list and to do so in accordance with attached punch list completion schedule

Sink Combs Dethlefs Architect/Engineer	Date	Ronald L. Ried, Director Facilities Business Services Principal Representative (Institution or Agency)	Date
Paul M. Leef, AIA, LEED™ AP Campus Architect & Director, Planning, Design & Construction (Authorized Delegate)	Date	Contractor	Date
Lonnie Greim, Project Manager Department of Facilities Management	Date		

The responsibilities of the Principal Representative and the Contractor for security, maintenance, heat, utilities, and insurance shall be as specified in the Contract Documents or as otherwise hereafter noted:

Exceptions, if any, to the commencement of warranties shall be:

The attached final punch list consists of _____ pages, and the attached Contractor's schedule showing the dates of commencement and completion of each punch list item consists of _____ pages.

When completely executed, this form shall be sent to the Contractor and the Principal Representative with a copy to State Buildings Programs.



STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAMS

PRE-ACCEPTANCE CHECKLIST*

Institution or Agency: University of Colorado at Boulder Final Punch List Date _____
 Architect/Engineer: Sink Combs Dethlefs, P.C.
 Contractor: _____
 Project No./Name: PR 004877 – EVNT: Main Event Area – Install Video Boards

After Contractor is satisfied that work is complete as per Notice of Substantial Completion Punch List, a date for final review is established. Architect/Engineer inspection is made with Contractor(s) and Principal Representative and State Buildings Programs (SBP) present. Forms are processed as required.

	DATE COMPLETED	A/E SIGNOFF	REMARKS
1. The Notice of Approval of Occupancy/Use has been fully executed and the Inspection Cards are completely signed-off.			
2. On the Pre-Acceptance Punch List (Form SBP-06) the final punch list items are noted by the Architect/Engineer.			
3. Schedule for corrections, deficiencies, and items to be supplied are established by Contractor.			
4. Final Change Orders are processed (must be completed prior to Notice of Acceptance).			
5. The Principal Representative shall not authorize final payment until all items on the punch list have been completed, the Notice of Acceptance issued and the Notice of Contractor's Settlement Date is published.			
6. Permanent keying, keys and keying instructions have been performed.			
7. Extra materials as per specifications are delivered to Principal Representative.			
8. As-built drawings have been submitted to Architect/Engineer.			
9. Guarantee/Warranty documentation requirements are met.			
10. Removal of Contractor's temporary work including cleanup and debris removal.			
11. State personnel are instructed in system and equipment operations as required by contract.			
12. All Instructions, manuals, guides, and charts have been transmitted to Principal Representative.			

Architect/Engineer _____ Date _____
Sink Combs Dethlefs, P.C.

Contractor _____ Date _____

State Buildings Programs _____ Date _____
(or Authorized Delegate)
Paul M. Leef, AIA, LEED™ AP
Campus Architect &
Director, Planning, Design & Construction

Principal Representative _____ Date _____
(Institution or Agency)
Ronald L. Ried, Director
Facilities Management Business Services



STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAMS

PRE-ACCEPTANCE PUNCH LIST

Institution/Agency: University of Colorado at Boulder Final Punch List Date _____
Architect/Engineer: Sink Combs Dethlefs, P.C.
Contractor: _____
Project No./Name: PR 004877 – EVNT: Main Event Area – Install Video Boards

This form to be used after follow-up inspections have been made and punch list is worked down to less than ten items.

Final Punch List Item	Disposition	Date	Remarks

Architect/Engineer
Sink Combs Dethlefs, P.C.

Date

Contractor

Date

State Buildings Programs
(or Authorized Delegate)
Paul M. Leef, AIA, LEED TM AP
Campus Architect &
Director, Planning, Design & Construction

Date

Principal Representative
(Institution or Agency)
Ronald L. Ried, Director
Facilities Management Business Services

Date



STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAMS

NOTICE OF FINAL ACCEPTANCE

Date of Notice of Acceptance: _____
Date to be inserted by A/E after consultation with the Principal Representative

Institution/Agency: University of Colorado at Boulder

Project No./Name: PR 004877 – EVNT: Main Event Area – Install Video Boards

TO:

Notice is hereby given that the State of Colorado, acting by and through the Regents of the University of Colorado at Boulder, accepts as complete* the above numbered project.

By _____ / _____
Paul M. Leef, AIA, LEED™ AP / Date Ronald L. Ried, Director
Campus Architect / Date
Director, Planning, Design & Construction Principal Representative Facilities Management Business Services
State Buildings Programs (Institution or Agency)
(of Authorized Delegate)

*When completely executed, this form is to be sent by certified mail to the Contractor by the Principal Representative.



STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAMS

NOTICE OF CONTRACTOR'S SETTLEMENT

Institution/Agency: University of Colorado at Boulder

Project No./Name: PR 004877 – EVNT: Main Event Area – Install Video Boards

Notice is hereby given that on the day of , 2010, at Boulder, Colorado, final settlement will be made by the STATE OF COLORADO with , hereinafter called the "CONTRACTOR", for and on account of the contract for the construction of a PROJECT described as **EVNT: Main Event Area – Install Video Boards**

1. Any person, co-partnership, association or corporation who has an unpaid claim against the said project, for or on account of the furnishing of labor, materials, team hire, sustenance, provisions, provender, rental machinery, tools. or equipment and other supplies used or consumed by such Contractor or any of his subcontractors In or about the performance of said work, may at any time up to and including said time of such final settlement, file a verified statement of the amount due and unpaid on account of such claim
2. All such claims shall be filed with Lonnie Greim, Project Manager, Department of Facilities Management, Campus Box 453 UCB, Boulder, CO 80309-0453.
3. Failure on the part of a creditor to file such statement prior to such final settlement will relieve the State of Colorado from any and all liability for such claim.

Dated at Boulder, Colorado, this day of 2010.

Paul M. Leef, AIA, LEED™ AP Date
Campus Architect &
Director of Planning, Design & Construction
State Buildings Programs
(or Authorized Delegate)

Ronald L. Ried, Director Date
Facilities Management Business Services
Principal Representative
(Institution or Agency)

MEDIA OF PUBLICATION:

PUBLICATION DATE:

NOTES TO EDITOR:

Transmit one copy of the Affidavit of Publication, and invoice, to: Marsha Slepicka, University of Colorado at Boulder, Department of Facilities Management, Campus Box 453 UCB, Boulder, CO 80309-0453



STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAMS

NOTICE OF APPROVAL OF OCCUPANCY/USE

Date of Occupancy: _____
Date to be inserted by the Architect/Engineer after consultation with Principal Representative

Institution/Agency: University of Colorado at Boulder

Project No./Name: PR 004877 – EVNT: Main Event Area – Install Video Boards

Portion(s) of project for which occupancy is approved:

Type of Occupancy: Total or Partial

The items identified below if applicable must be completed with before Occupancy is approved.

Date Completed	A/E Signoff	
		1. The Notice of Substantial Completion has been issued and the Building Inspection Record is Cards are completely signed-off (or a Temporary Certificate, or Certificate, of Occupancy has been issued and copies attached.
		2a. Notification has been made to the local Fire Department concerning which portion(s) of the building will be occupied and the date(s).
		2b. Fire alarms, smoke detection systems and building fire sprinkler systems have been fully checked and are operable.
		2c. The building's fire connections must be installed and operable, if applicable.
		3. Coordination for final utility and service connections and meters (water, gas, sewer, electricity and telecommunication) has been made and systems are in full operating order.
		4. Sterilization of plumbing systems has been performed.
		5. Operational test of systems and equipment has been performed as required.
		6. Systems adjustments such as balancing, equipment operations, etc., have been performed. Reports have been submitted to the Architect/Engineer for approval.
		7. Principal Representative furnished equipment and furnishings are coordinated and placed.



STATE OF COLORADO
 OFFICE OF THE STATE ARCHITECT
 STATE BUILDINGS PROGRAMS

CLOSING-OUT CHECKLIST*

Institution or Agency: University of Colorado at Boulder Final Punch List Date _____
 Architect/Engineer: Sink Combs Dethlefs, P.C.
 Contractor: _____
 Project No./Name: PR 004877 – EVNT: Main Event Area – Install Video Boards

After Contractor or Construction Manager is satisfied that work is complete, a date for final review is established. Architect/Engineer inspection is made with Contractor(s) and Principal Representative and State Buildings Programs (SBP) present. Forms are processed as required.

- 1a. Final inspections have been made and permission to occupy Project is obtained through SBP Delegate. The **Building Inspection Cards** are completely signed off and attached.
- 1b. If Principal Representative wishes to occupy entire project or portions of Project before completion (Beneficial Occupancy) Project review of condition and responsibility is conducted and noted. (Fill out Form SBP-01 in addition to this form).
2. Notify the local fire department of the date the building will be occupied.
3. Coordination for final utility and service connections, meters, etc., has been made (water, gas, sewer, electricity and telecommunication) and in full operating order.
4. Sterilization of plumbing systems has been performed.
5. Operational tests of systems and equipment have been performed as required.
6. Systems adjustments, such as balancing, equipment operations, etc., have been performed. Reports have been submitted to Architect/Engineer and approved.
7. State personnel are instructed in system and equipment operations as required by contract.
8. Instructions, manuals, guides, charts, etc., are transmitted to Principal Representative.
9. Principal Representative furnish equipment and furnishing are coordinated and placed.
10. Review drawing, specifications, addenda, change orders, etc. for work to be done and note.

DATE COMPLETED	SIGNOFF INITIALS	REMARKS



STATE OF COLORADO
OFFICE OF THE STATE ARCHITECT
STATE BUILDINGS PROGRAMS
Contract Close-out Final Punch List

Institution/Agency: University of Colorado at Boulder Final Punch List Date _____

Contractor: _____

Project No./Name: PR 004877 – EVNT: Main Event Area – Install Video Boards

This form to be used after follow-up inspections have been made and punch list is worked down to less than ten items:

Final Punch List Item	Disposition	Date	Remarks

Contractor _____ Date _____ H+L Architecture Architect/Engineer _____ Date _____

Paul M. Leef, AIA, LEED™ AP _____ Date _____ Ronald L. Ried, Director Facilities Management Business Services Principal Representative (Institution or Agency) _____ Date _____
Campus Architect & Director, Planning, Design & Construction State Buildings Programs (or Authorized Delegate)

Post Construction Warranty Report

Project: PR 004877 – EVNT: Main Event Area – Install Video Boards

Warranty Contractor: _____

Date Warranty Begins: _____ Date Warranty Expires: _____

Facilities Management FAX No. 303-492-4082 Reported By: _____

Campus Box 453 UCB, Boulder, CO 80309-0453 F/M Rep. Informed: _____

Date Reported: _____ Taken By: _____

Extended Warranty Item:

Description of Warranty Item:

Date Reported to Contractor: _____

Contractor Response:

Date of Resolution: _____

Note:

NOTICE to Contractors:

GIVEN TO:

CONTRACTOR

Signature

DATE

PR 004877

PROJECT NO.

EVNT: Main Event Area – Install Video Boards

PROJECT NAME

ENVIRONMENTAL RESPONSIBILITIES

The University of Colorado at Boulder (UCB) and the Boulder community are very sensitive to pollution issues. We endeavor to be leaders in promoting excellence in environmental stewardship and expect that all faculty, staff, students and contractors be aware of their environmental responsibilities and perform their activities in an environmentally responsible manner.

Contractors working on the UCB campus are required to comply with all applicable University, City, State and Federal environmental regulations and safety standards. Hazardous and regulated materials must be managed and disposed of properly. Work sites must control dust, debris and run-off, and pay special attention to preventing any pollutants from entering the storm sewer or surface water collection systems. These systems ultimately drain into our creeks and waterways.

Please do your part to promote awareness and compliance!

On the **reverse side** of this flyer you will find examples of the kinds of environmental and safety issues and practices that often require attention at construction sites.

Questions, Comments or Concerns? – Please Contact:

Environmental Health and Safety **303-492-6025.**

UCB-EH&S August 31, 2001

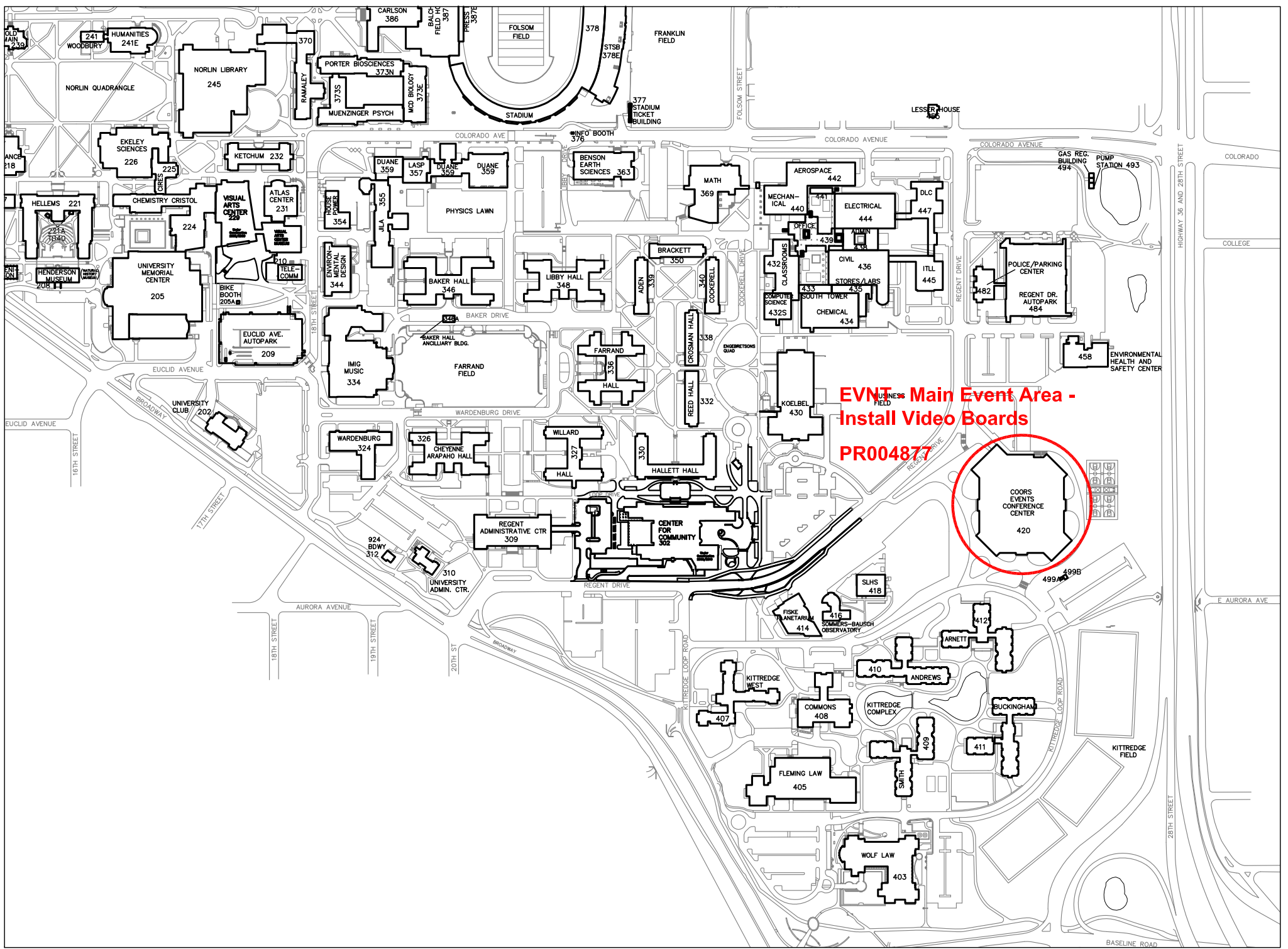
Environmental & Safety REMINDERS

at Construction Sites:

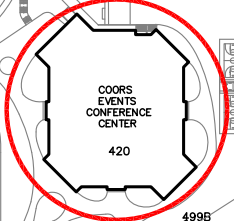
- ✓ **Construction Waste & Debris** Keep saw-cut slurry, drywall mud, grout and mortar, paint, and all other wastes OUT OF GUTTERS, STREETS, TRENCHES, AND STORM DRAINS!

Use berms, sand bags, straw, buckets and drums; sweep and shovel to construction dumpster; allow solids to settle before pouring off water to the sanitary sewer. Identify drains in advance and designate sanitary sewer drain(s) where it's OK to dump liquids that are pre-approved by EH&S 303-492-6025.

Recycle (303-492-5321) construction materials wherever possible.
- ✓ **OSHA** Confined space entry, MSDS, product identification & labeling, PPE, trenching and shoring, fall protection, welding vision screens, etc.
- ✓ **Asbestos & Lead-Based Paint** Assume all building materials are asbestos-containing unless written report(s) indicate otherwise. A pre-construction environmental site survey is required prior to beginning work - call EH&S Asbestos / Lead Management 303-492-6168.
- ✓ **Dust Control** Use wet methods, exhaust fans, HEPA vacs, barriers, etc.; visible emissions are not permitted.
- ✓ **Hazardous Materials & Waste** Includes paints and solvents, oils, fuels, coolants, corrosives, cleaners, pesticides, PCB light ballasts, mercury vapor lamps, smoke detectors, rechargeable and lead acid batteries, and many other materials and products. **Do not** place in the trash or down the drain without approval from EH&S.
- ✓ **Odors and Vapors, IAQ** Use barriers, smoke eaters, exhaust fans, ventilation system controls, etc.
- ✓ **De-watering** Submit plan to Facilities Management for groundwater / stormwater / drainage controls. Discharge permits may be required from the Colorado Department of Public Health and Environment - Water Quality Division 303-692-3500).
- ✓ **Spills and Emergencies** Post contingency/preparedness plan; prevent releases to the environment; call 911 immediately to report hazardous spills (weekdays also report to EH&S 303-492-6025).
- ✓ **Utility Locates** Before digging, **ALWAYS** call the Utility Notification Center of Colorado (UNCC) 1-800-922-1987.



**EVNT Main Event Area -
Install Video Boards
PR004877**



COORS
EVENTS
CONFERENCE
CENTER
420

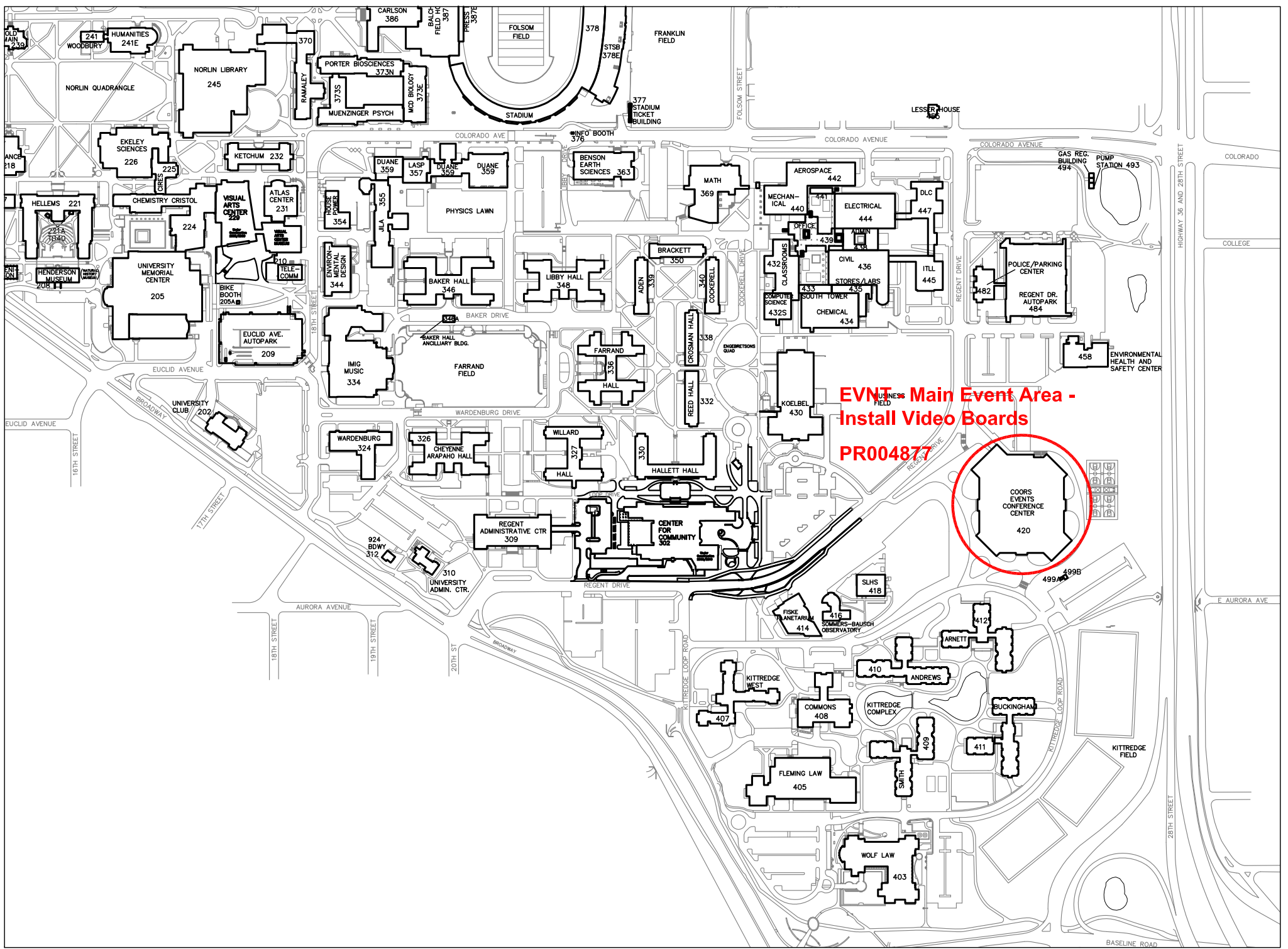
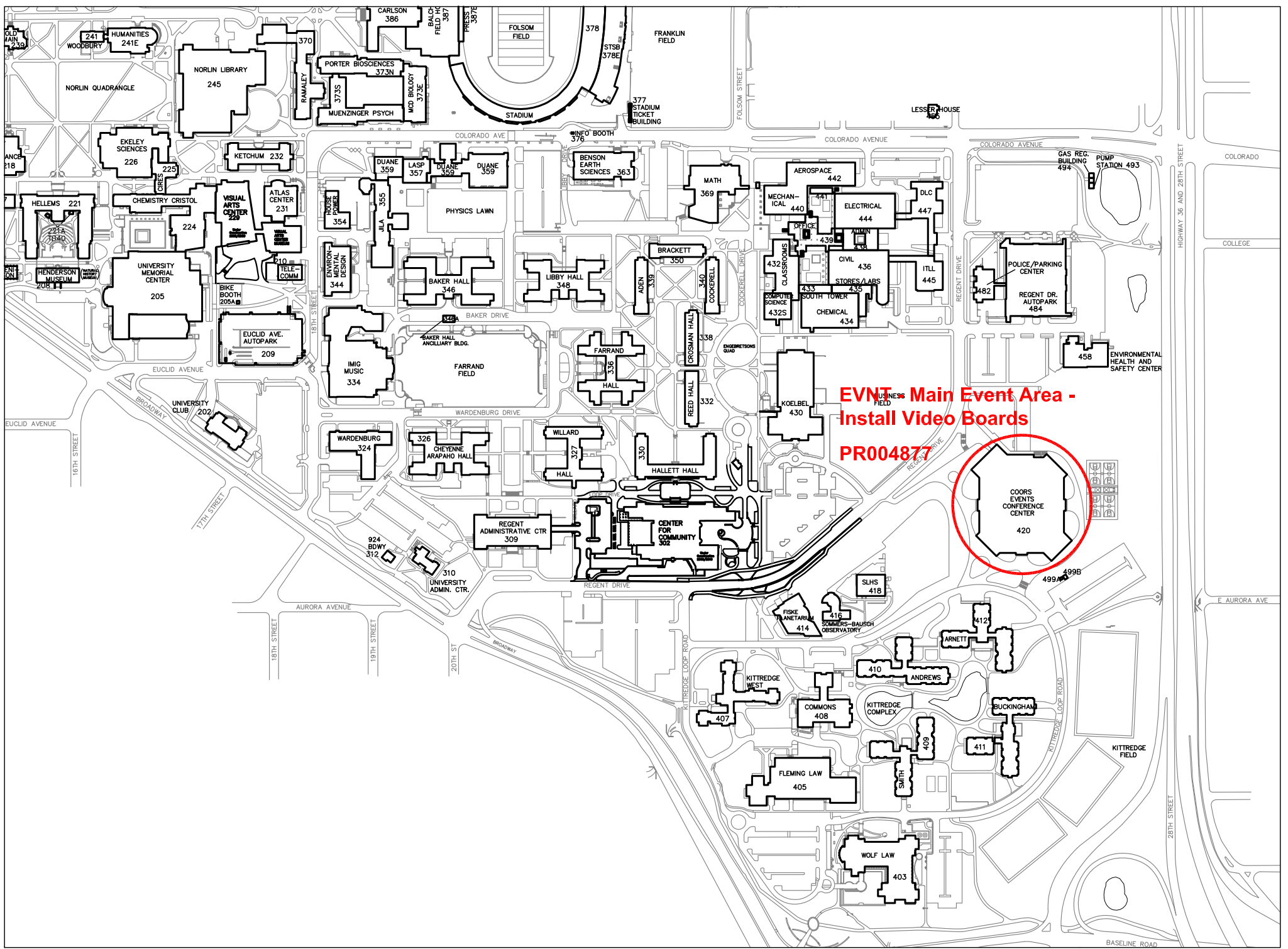
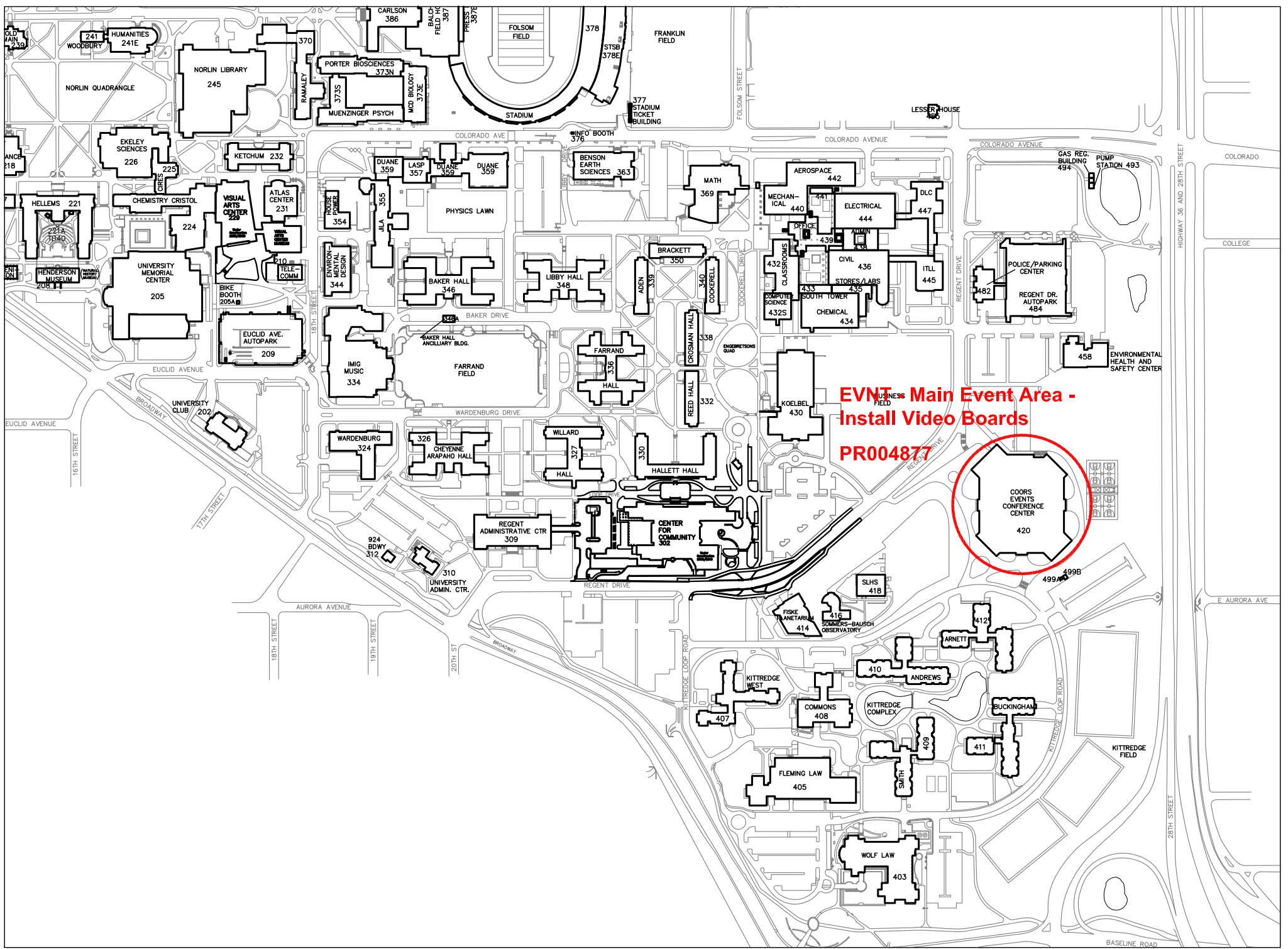


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5.	Contractors Experience Statement.....	16
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10.	Notice of Award	1
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Section Number	Section Title
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DIVISION 1 - GENERAL REQUIREMENTS

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01020	Administration and Supervision
01030	Alternates
01041	Project Coordination
01042	Mechanical and Electrical Coordination
01045	Cutting and Patching
01060	Regulatory Requirements
01075	Specification System
01121	Hazardous Material Procedures
01200	Project Meetings
01300	Submittals, Shop Drawings, Product Data and Samples
01400	Quality Control
01500	Temporary Facilities
01600	Material and Equipment
01700	Contract Closeout
01710	Cleaning
01720	Project Record Documents
01730	Operating and Maintenance

DIVISION 2 - SITE CONSTRUCTION

02070	Selective Demolition
-------	----------------------

DIVISION 3 – CONCRETE (not used)

(None in Project)

DIVISION 4 – MASONRY (not used)

(None in Project)

DIVISION 5 - METALS

05500	Metal Fabrications
-------	--------------------

DIVISION 6 - WOOD AND PLASTICS (not used)

(None in Project)

DIVISION 7 - THERMAL AND MOISTURE PROTECTION (not used)

(None in Project)

DIVISION 8 - DOORS AND WINDOWS (not used)

(None in Project)

DIVISION 9 – FINISHES

09900	Painting
-------	----------

DIVISION 10 – SPECIALTIES (not used)

(None in Project)

DIVISION 11 - EQUIPMENT

116643	Scoreboard Systems
--------	--------------------

DIVISION 12 – FURNISHINGS (not used)
(None in Project)

DIVISION 13 - SPECIAL CONSTRUCTION (not used)
(None in Project)

DIVISION 14 - CONVEYING SYSTEMS (not used)
(None in Project)

DIVISION 15 – MECHANICAL (not used)
(None in Project)

DIVISION 16 - ELECTRICAL

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16050	Common Work Results for Electrical
16440	Disconnect Switches
16450	Secondary Grounding
16461	Dry Type Transformer

END OF TABLE OF CONTENTS

1.01 CONDITIONS AND REQUIREMENTS

Division 1 - General Requirements shall govern work under all Divisions of the Specifications.

1.02 SPECIFICATION LANGUAGE EXPLANATION

Specifications are of abbreviated, simplified or streamlined type and include incomplete sentences. Omissions of words or phrases such as "the Contractor shall," "in conformity therewith," "shall be," "as noted on the Drawings," "a," "the" are intentional. Supply omitted words or phrases by inference in same manner as they are when "NOTE" occurs on Drawings. Supply words "shall be" or "shall" by inference when colon is used within sentences or phrases. Supply words "on the Drawings" by inference when "as indicated" is used with sentences or phrases.

Where reference is made to specifications, societies, institutes, or associations or manufacturer's directions, they are, except as may be inconsistent herewith, made part of specifications, to same extent as if written out in full herein. Use latest edition, at time of bidding, if a date is not given.

1.03 SUBMITTALS

A. Prepare data for use by the University of Colorado, Facilities Management personnel.

B. Format:

1. Submit electronically in **Portable Document Format** (PDF) format as one document, OCR (Optical Character Recognition) searchable, bookmarked according to the Construction Specifications Institute (CSI) standards.
2. Title shall be "SPECIFICATIONS", and shall include:
 - a. Name of project and submittal stage and date of submittal (month, day, and year).
 - b. University of Colorado Project number (Include on cover and in header or footer of each page)

1.04 CONTENT OF MANUAL

- A. An electronically-written table of contents shall be provided for each volume, arranged according to CSI standards.
Include the following:
1. Name of responsible installing principal contractor, address, and telephone number.

1.05 ABBREVIATIONS

References in Contract Documents to trade associations, technical societies, recognized authorities and other institutions include following organizations, which are sometimes referred to only by corresponding abbreviations:

AA	Aluminum Association
AAMA	Architectural Aluminum Manufacturer's Association
ACI	American Concrete Institute

AIMA	Acoustical and Insulating Materials Association (successor to AMA and IBI)
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AMA	Acoustical Materials Association
ANSI	American National Standards Institute (successor to USASI and ASA)
APA	American Plywood Association
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASTM	American Society for Testing Materials
AWI	Architectural Woodwork Institute
AWPA	American Wood Preservers Association
AWS	American Welding Society
CDA	Copper Development Associations, Inc.
CM/GC	Construction Manager/General Contractor
CRA	California Redwood Association
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standard (U.S. Department of Commerce)
DFPA	Douglas Fir Plywood Association
EPA	Environmental Protection Agency
FGMA	Flat Glass Marketing Association
FIA	Factory Insurance Association
FM	Factory Mutual Engineering Division
FS	Federal Specification
MIA	Marble Institute of America
MIL	Military Specification
MILMA	Metal Lath Manufacturer's Association
NAAMM	The National Association of Architectural Metal Manufacturers
NBFU	National Board of Fire Underwriters
NBS	National Bureau of Standards
NCMA	National Concrete Masonry Association
NEC	National Electric Code (of NBFU)
NEMA	National Electrical Manufacturers' Association
NFPA	National Fire Protection Association
NIOSH	National Institute of Occupational Safety and Health
NMWIA	National Mineral Wool Insulation Association
NPVLMMA	National Paint, Varnish and Lacquer Manufacturers' Association
NTMA	The National Terrazzo and Mosaic Association
OSHA	Occupational Safety and Health Administration
PCA	Portland Cement Association
PCI	Prestressed Concrete Institute
PEI	Porcelain Enamel Institute
PS	Product Standard (U.S. Department of Commerce)
SCPI	Structural Clay Products Institute
SDI	Steel Deck Institute
SJI	Steel Joist Institute
SMACNA	Sheet Metal and Air Conditioning Contractor's National Association
SPA	Southern Pine Association
SPI	The Society of Plastic Industry, Inc.
SPR	Simplified Practice Recommendation (U.S. Department of Commerce)
SSPC	Steel Structures Painting Council
SWI	Steel Window Institute

TCA	Tile Council of America
UL	Underwriters' Laboratories, Inc.
WCLA	West Coast Lumbermen's Association
WRI	Wire Reinforcement Institute
WWPA	Western Wood Products Association

1.04 LAYING OUT WORK

The Contractor will furnish reference bench mark and maintain bench mark and all other grades, lines, and levels and dimensions as indicated in the Contract Documents. Report any errors or inconsistencies in above to Owner before commencing work.

Except as delegated by subcontract or normal trade practice, the Contractor will be responsible for all lines, elevations, and measurements of work indicated.

1.05 EXAMINATION OF SITE

Failure to visit the site will in no way relieve any Contractor from the necessity of furnishing materials or performing work that may be required to complete work in accordance with the Contract Documents without additional cost to Owner.

END OF SECTION

PART 1 - GENERAL

1.01 SCHEDULE OF DRAWINGS, SPECIFICATIONS AND ADDENDA

The following Drawings, Project Manual, and Addenda from the Contract Documents.

- A. Set(s) of Drawings & project manuals dated April 21, 2010. Drawing list is as follows:

Sheet No.	Titled
Architectural	
A0.00	General Information, Sheet Index
A0.01	Code Analysis / General Notes
A2.00	Overall Concourse Level Floor Plan
Electrical	
E0.01	Electrical Legend
E0.02	One-Line Diagram
E0.03	Electrical Schedules
E1.01	Concourse Level Electrical Plan
E1.02	Mechanical Level Electrical Plan
Scoreboard	
200	Electrical Notes & Index
201	Endwall Display Retrofit
202	Arena Broads
203	Overall Power/Signal Layout
304	Scoreboard Details
305	Scoreboard Layout Plan

- B. Project Manual titles: Scoreboard System Upgrade at Coors events Center dated April 21, 2010.
- C. Addenda: All Addenda issued prior to bidding.

1.02 WORK COVERED BY CONTRACT DOCUMENTS

- A. Work covered: Work under this contract includes all materials, equipment and labor necessary to complete the work indicated on the drawings, described in specifications, addenda or reasonably inferred.

1.03 CONTRACTORS

All work will be executed under one prime construction contract between the Owner and the Contractor.

Except as indicated otherwise, all work under this contract will be under the direction of the prime contractor.

1.04 JOB CONDITIONS

- A. Limit construction operations to those methods and procedures which will not adversely and unduly affect the Owner's occupied spaces inclusive of parking facilities.

Contractor shall be aware that the new building to the north of the Coors Events Center will be under construction. Scheduling of materials delivery, ect. shall be coordinated with that contractor.

- B. Do not interrupt building access and use, except as permitted by the Owner.

Provide **eight (8)** work days notice to the Owner of construction activities which will severely impact the occupancy and use of adjacent areas.

- C. Provide temporary barriers and/or partitions as required to protect the occupants of the building and the general public from injury due to the work of this project; and/or to protect adjacent areas of the building from the spread of dust and dirt caused by the work or this project.

Remove temporary barriers and partitions upon completion of the Project.

1. Temporary partitions shall be constructed of 1/2" plywood on the construction face nominal 2" X 4" wood studs and 1/2" gypsum wallboard on the public occupied face.

- D. Do not interrupt power, lighting, plumbing, telephone and HVAC services to occupied areas without Owner's approval. Such interruptions must be scheduled at least **eight (8)** work days in advance and have Owner's approval.

- E. It is possible that an event could occur on the court floor of which the owner will so advise on how to proceed.

1.05 PROTECTION OF WORK AND ADJACENT PROPERTY

- A. Buildings and property adjacent to work included in this project may be subject to damage due to construction operations.

Prior to the start of the work included in this Contract engage the services of a photographer to record the existing condition of adjacent structures and property. Contractor shall provide one set **on disk** to the Owner and retain negatives and one set of prints for their records. Sufficient photos with adequate detail to thoroughly document the conditions surrounding the work shall be provided.

- B. At the completion of the project, Contractor shall restore existing buildings, landscaping, parking facilities and property to same condition as prior to the start of the work.

- C. In addition to the requirements of the General Conditions of the Contract for Construction, the Contractor shall:

1. Notify, in writing, the Owner of University or private property which interferes with the work and arrange with them for disposition of such property.
2. Weather Protection: Provide protection against rain, snow, wind, ice, storms, or heat so as to maintain work, materials, apparatus, and fixtures free from injury or damage. At the end of each day's work, cover new work likely to be damaged.
3. The Contractor will maintain free of obstructions and debris, all designated corridors and emergency exits, handicap access ramps and sidewalks to building. Provide temporary directional handicapped signage for routing to the nearest accessible facilities.

1.06 EXISTING FURNITURE AND EQUIPMENT

The Owner will remove or relocate existing movable furniture and equipment from the areas in which the Contractor is working. Notify the Owner not less than three days prior to starting work in areas where furniture and equipment require moving.

1.07 CONTRACTOR'S ACCESS PARKING AND STAGING AREAS

A. Work included in this project will need to be performed within the limitations of available access at the site. The University shall limit the area available for staging and parking due to the additional number of construction projects planned during the execution of this contract. Contractor shall adjust the means and methods of construction to allow for the restrictions surrounding the site.

B. All parking on campus except for some one-hour zones on city streets and a few metered spaces is under control and authority of the Parking and Transportation Services (PTS) of the University. All University parking is by permit only.

C. Types of parking and staging are defined as follows:

General Staging Areas are approved areas adjacent to the site when available or in University designated group staging yards. General Staging Areas may be used for any purpose, including employee parking, on a space available basis, but must be coordinated through the UCB Project Manager and PTS. Vehicles may not park outside of general staging areas except in areas coordinated and approved by PTS.

Restricted Staging Areas are approved areas near the site for the construction dumpster, off-loading of equipment, contractor's work trailer, and materials that are soon to be incorporated into the work. No vehicles shall park in a restricted staging area for more than 20 minutes between the hours of 8:00 a.m. and 5:00 p.m. weekdays.

Contractor Employee Parking are areas for workers needing parking on campus. Coordinate through UCB Project Manager and PTS.

Prohibited Parking are areas designated in the Contract Documents as No Parking areas. The contractor shall not allow any parking in areas so designated under any circumstance.

D. The restrictions in this Section are in addition to any other restrictions or rules provided by PTS. Fees shall be assessed for the use of any PTS facility for staging and construction activities.

E. The designated staging area for this project shall be: Staging will occur with-in the building. The designated parking will be in Lot 436 or Lot 416 (south side of Coors Events Center). Services have only 3 or 4 spaces available. Contractor will pay for his parking needs and insure that his sub contractor's parking permits are included in the Bid. Budget \$48.00 per month: per car/van/pickup. Budget \$12.00 per week per vehicle. Parking at these lots can not be assured after August 23rd of which the contractor may have to park on East Campus and shuttle over to the Events center. There is also metered pay parking just north of Coors in Lot 440 for short term parking.

1.08 OCCUPANCY REQUIREMENTS

- A. Owner may occupy designated areas for the purpose of storage of furnishings and equipment and installation of equipment.
- B. Execute Certificate of Substantial Completion for each designated portion of work prior to Owner occupancy. Contractor shall allow:
 - 1. Access for Owner personnel.
 - 2. Use of parking facilities.
 - 3. Operation of HVAC and electrical systems.
- C. On occupancy, Owner will provide, for occupied areas:
 - 1. Operation of HVAC and electrical systems.
 - 2. Maintenance.

1.09 CONSTRUCTION AND SEQUENCE SCHEDULE:

- A. In order to accommodate the uninterrupted operation of the existing building during the various phases of construction, the sequence of construction operations shall be as follows:
 - 1. The sequence concept is to: (1) prepare the existing facility to function during renovation through completion; (2) thence occupy the newly remodeled portion; and (3) upon completion, finally reoccupy the remodeled portions.
 - 2. Utilizing this concept break down the Schedule into broad scope categories augmented by "Owner Action" and "Contractor action" columns that indicate coordination tasks which define the various phases of the work.
 - 3. The intent of the categorization is to generally summarize the nature and extent of work to be performed without in any way limiting specific requirements of the Contract Documents.
 - 4. Some overlapping between the several construction operations will occur, and where possible, permission may be granted to start certain portions of the work before the previous operations were completed in their entirety. Such detail scheduling shall be done as the work progresses, provided that the Owner's operations remains uninterrupted, but in all cases must receive Owner approval.
 - 5. Where it may not be possible to complete certain mechanical and electrical services in connection with making the work complete and ready for occupancy, temporary services as directed and as approved shall be installed to permit occupancy by the Owner at the earliest possible date.
 - 6. Contractor shall submit a construction sequence schedule and coordinate with owner's events, needs and also establish days of material delivery with contractor of new practice facility that is under construction to the north of unloading dock area.

1.10 TEMPORARY ELECTRIC SERVICE

- A. Connect to existing power service. Power consumption shall not disrupt owners need for continuous service. **Owner** to pay for power consumed. Provide power outlets for construction operations, branch wiring, distribution boxes, and flexible power cords as required.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to work of this section.

1.02 SURVEYS, LAYOUTS, AND LEVELS

- A. General: Working from lines and levels established by the existing building, and as shown in relation to the work, establish and maintain bench marks and other dependable markers to set the lines and levels for the work of construction as needed to properly locate every element of the work of the entire project. Calculate and measure required dimensions as shown (within recognized tolerances if not otherwise indicated); do not scale the drawings to determine dimensions. Continuously advise tradesmen performing the work of the marked lines and levels provided for use in the layout of work.

1.03 PROJECT RECORD DOCUMENTS

- A. Maintain at job site, one copy of:
 - 1. Contract Drawings
 - 2. Specifications
 - 3. Addenda
 - 4. Reviewed Shop Drawings
 - 5. Change Orders
 - 6. Other Modifications to Contract
 - 7. Field Test Records
 - 8. As-Built Drawings
- B. Maintain documents in clean, dry, legible condition and do not use record documents for construction purposes. Make documents available at all times for inspection by the Consultant and Owner.
- C. Label each document "Project Record" in 1" or larger printed letters.
- D. Record drawing information in colored pencil with different colors for the various systems and defined by color legend.
- E. Record drawings and specifications shall include the following:
 - 1. Location of internal utilities and appurtenances concealed in construction referenced to visible and accessible features of structure. Location of concealed valves, dampers, controls, balancing devices, junction boxes, clean-outs, and other items requiring access or maintenance.
 - 2. Field changes of dimension and detail, changes made by Change Order or Field Order and details not on original contract drawings.
 - 3. Fire protection and alarm systems shop drawings.
- F. Submit all record drawings to the Consultant at the completion of the project.

1.04 CLEANING

- A. Cleaning and Protection Work: At the time each unit of work or element of the construction is completed (substantially) in each area of the Project, clean the unit or element to a condition suitable for occupancy and use (as intended), and restore minor or superficial damage. Replace units and elements which are damaged beyond successful restoration. Clean and restore adjoining surfaces and other work which was soiled or damaged (superficially) during the installation; replace other work damaged beyond successful restoration. Where the performance of subsequent work could possibly result in damage to the complete unit or element, provide protective covering or other provisions to minimize possible damage. Repeat cleaning and protection operations during remainder of construction period, wherever work might otherwise be damaged by sustained soiling or exposure.
- B. During Construction: Oversee cleaning and ensure that building, grounds, and public properties are maintained free from accumulation of waste materials and rubbish. At reasonable intervals during daily progress of work, clean up site and access and dispose of waste materials, rubbish, and debris. Vacuum clean interior building areas when ready and continue vacuum cleaning on an as-needed basis until building is ready for acceptance or occupancy.

1.05 PROJECT SIGN

Erect no project sign or job-site sign of any kind, except warning signs as specified in Section 01500, without written authorization of the Owner.

1.06 COORDINATION

- A. The Contractor shall coordinate the work so as not to interfere with the building custodian's normal cleanup activities.
- B. The Contractor shall be responsible for coordinating all the work of the project. The Contractor shall coordinate the efforts of all subcontractor(s) and the deliveries of suppliers so that the work progresses in an orderly fashion without delay towards timely completion of a complete project in accordance with the drawings and specifications.
- C. The Contractor shall note that concurrent with his work, other contractors, suppliers, and the Owner's facilities and maintenance personnel may be working in relatively close proximity. The Contractor will be solely responsible for coordinating his work with that of other contractors and will make no claims for failure to do so.

1.08 METHODS OF CONSTRUCTION

- A. The procedure and method of construction is the prerogative and the responsibility of the Contractor. If professional assistance is required to safely implement method of construction, the Contractor shall, on his own, employ professional help.

END OF SECTION

PART 1 - GENERAL

1.01 GENERAL ALTERNATE REQUIREMENTS

- A. General: The description for each alternate is recognized to be incomplete and abbreviated but implies that each change must be complete for the scope of work affected. Refer to applicable sections and to applicable drawings for the specific requirements of the owner, whether or not references are so noted in the description of each alternate. Modify surrounding work as required to integrate with the work of each alternate.

1.02 SPECIFIC ALTERNATES

- A. Add Alternate:

Reference the drawings for Alternate No. 1 – Video ribbon and all associated work for electrical, structural fabrications, mounting of video ribbons and finishes.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

- A. General Contractor is responsible for all of the work of this contract.
 - 1. Assign and subcontract portions of the work as required to assure that all work is constructed in compliance with these documents.
 - 2. Coordinate the work of the several subcontractors for the project.
 - 3. Coordinate work of this contract with work by separate contractors.
- B. Each subcontractor shall:
 - 1. Coordinate work of his own employees and subcontractors.
 - 2. Expedite his work to assure compliance with schedules.
 - 3. Coordinate his work with that of other subcontractors and work by separate contractor.
 - 4. Comply with orders and instructions of owner.
- C. Related Requirements
 - 1. All Division 1 Sections.

1.02 CONSTRUCTION ORGANIZATION AND START-UP

- A. Establish on-site lines of authority and communications.
 - 1. Attend pre-construction meeting with subcontractors upon commencement of the project.
 - 2. Establish procedures for intra-project communications.
 - a. Submittals.
 - b. Reports and records.
 - c. Recommendations.
 - d. Coordination Drawings.
 - e. Schedules.
 - f. Resolution of conflicts.
 - 3. Interpret Contract Documents.
 - a. Consult with Architect to obtain interpretation.
 - b. Assist in resolution of questions or conflicts which may arise.
 - c. Transmit written interpretations to subcontractors, and to other concerned parties.
 - 4. Assist in obtaining permits and approvals.
 - a. Obtain building permits and special permits required for work or for temporary facilities.
 - b. Verify that subcontractors have obtained inspections for work and for temporary facilities.
 - 5. Control the use of site.
 - a. Supervise field engineering and site layout.
 - b. Allocate space for each subcontractor's use for field offices, sheds, work and storage areas.
 - c. Establish access, traffic and parking allocations and regulations.
 - d. Monitor use of site during construction.

1.03 CONTRACTOR DUTIES

- A. Construction Schedules.
 - 1. Coordinate schedules with several subcontractors.
 - 2. Monitor schedules as work progresses.
 - a. Identify potential variances between schedules and probable completion dates for each phase.
 - b. Recommend adjustments in schedule to meet required completion dates.
 - c. Adjust schedules of subcontractors as required.
 - d. Document changes in schedule.
 - 3. Observe work of each subcontractor to monitor compliance with schedule.
 - a. Verify that labor and equipment are adequate for the work and the schedule.
 - b. Verify that product procurement schedules are adequate.
 - c. Verify that product deliveries are adequate to maintain schedule.
- B. Process Shop Drawings, Product Data and Samples.
 - 1. Review for compliance with Contract Documents.
 - a. Field dimensions and clearance dimensions.
 - b. Relation to available space.
 - c. Relation to other trades, equipment and systems.
 - d. Submit to Architect.
- C. Monitor the use of temporary utilities.
 - 1. Verify that adequate services are provided and maintained.
- D. Inspection and Testing.
 - 1. Inspection work to assure performance in accord with requirements of Contract Documents.
 - 2. Administer special testing and inspections of suspected work.
 - 3. Reject work which does not comply with requirements of Contract Documents.
 - 4. Coordinate testing laboratory services.
 - a. Verify that required laboratory personnel are present.
 - b. Verify that tests are made in accordance with specified standards.
 - c. Review test reports for compliance with specified criteria.
 - d. Recommend and administer required retesting.
- E. Monitor contractor's periodic cleaning.
 - 1. Enforce compliance with specifications.
 - 2. Resolve any conflicts.
- F. Coordinate changes.
 - 1. Recommend necessary or desirable changes.
 - 2. Assist owner in negotiating change orders.
 - 3. Promptly notify all subcontractors of pending changes.
- G. Maintain Reports and Records at Job Site available to Architect and Subcontractors.
 - 1. Log progress of work of each subcontractor.
 - 2. Records
 - a. Contracts.
 - b. Purchase orders.

- c. Materials and equipment records.
 - d. Applicable handbooks, codes and standards.
 - 3. Obtain information from subcontractors and maintain file of Project Record Documents.
 - 4. Assemble documentation for handling of claims and disputes.
- H. Coordinate work of this Contract and requirements of this section with work by Separate Contract including but not limited to:
- 1. Removal of asbestos containing materials by separate contract.

1.04 CONTRACT CLOSEOUT

- A. Coordinate equipment start-up.
- 1. Provide seven days notification prior to start-up of each item.
 - 2. Ensure that each piece of equipment or system is ready for operation.
 - 3. Execute start-up under supervision of responsible persons in accordance with manufacturer's instructions.
 - 4. Perform required testing and balancing.
 - 5. Record dates of start of operation of systems and equipment. Submit written report that equipment or system has been properly installed and is functioning correctly.
 - 6. Provide written notice of beginning of warranty period for equipment put into service.
- B. Demonstration and Instructions
- 1. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to Substantial Completion.
 - 2. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, seasonal operation, and shutdown of each item of equipment.
- C. At completion of work of each Section, conduct an inspection to assure that
- 1. Specified cleaning has been accomplished.
 - 2. Temporary facilities have been removed from site.
- D. At completion
- 1. Conduct an inspection to list work to be completed or corrected.
 - 2. Supervise correction and completion of work as established in Certificate of Completion.
- E. When a portion of the Project is occupied prior to final completion, coordinate established responsibilities of each subcontractor.
- F. Final completion.
- 1. When each Subcontractor determines that work is finally complete, conduct an inspection to verify completion of work.
 - 2. Assist owner and architect in inspection.
- G. Administer contract closeout.
- 1. Receive and review Subcontractor's final submittals.
 - 2. Transmit to architect with recommendation for action.

END OF SECTION

GENERAL REQUIREMENTS
SECTION 01042
COORDINATION

MECHANICAL AND ELECTRICAL

PART 1 - GENERAL

1.01 SUMMARY

- A. Carefully coordinate the interface between Division 15 (Mechanical) and Division 16 (Electrical) before submitting any equipment for review or commencing installation.
- B. Responsibility: Unless otherwise indicated, all motor and controls for Division 15 equipment shall be furnished, set in place and wired in accordance with the following schedule:

ITEM	FURNISHED UNDER	SET IN PLACE UNDER	POWER WIRING UNDER	CONTROL WIRING UNDER
Equipment Motor	15	15	16	-
Automatically Controlled Starter/contractors:				
Separate	15	16	16	15
Factory Mounted & Wired	15	15	16	15
In Motor Control Centers	16	16	16	16
Manually Controlled Starter/Contractors:				
Separate	15	16	16	15
Factory Mounted & Wired	15	15	16	15
Motor Speed Controllers	15	16	16	16
Disconnect (Note 1) Switches	16	16	16	-
Contactors	16	16	16	-
Thermal Overload (Note 1) Switches	16	16	16	-
Manual Operation (Note 2)	16	16	16	-
Switches	16	16	16	-
Control Relays (Note 2)	15	15	-	15
Control Transformers	15	15	16	15
Control Circuit Outlets	16	16	16	-
Thermostats (Note 2)	15	15	-	15

GENERAL REQUIREMENTS
SECTION 01042
COORDINATION

MECHANICAL AND ELECTRICAL
DIVISION 1 - PAGE 2

ITEM	FURNISHED UNDER	SET IN PLACE UNDER	POWER WIRING UNDER	CONTROL WIRING UNDER
Time Switches (Note 2) Not in Control Panel	15	15	16	15
Push Button Stations, Pilot Lights	16	16	16	16
Thermostats (Note 2) Controls: Integral with Equipment Directly Applied to Ducts, Pipes, etc.	15	15	16	15
Valve Motors, Damper Motors, Solenoid Valves, etc.	15	15	-	15
EP Valves or Switches, P.E. Switches,	15	15	-	15
Control Circuit Outlets	16	16	16	-
Fire Alarm Systems	16	16	16	16
Fire Sprinkler Alarm	16	16	-	16
Firestats	16	16	-	16
Smoke Detectors Including Relays for Fan Control	16	16	-	16
Control Air Compressor	15	15	16	15
Refrigerated Air Dryer	15	15	16	15
Equipment Interlocks	15	15	-	15
Boiler and Water Heaters	15	15	16	15

NOTES:

1. If furnished as part of factory wired equipment furnished and set in place under Division 15, wiring and connections under Division 16.
2. If float switches, line thermostats, P.E. switches, time switches, or other controls carry the FULL LOAD CURRENT to any motor, they shall be furnished under Division 15, but they shall be set in place and connected under Division 16 except that where such items are an integral part of the mechanical equipment, or directly attached to ducts, piping, or other mechanical equipment, they shall be set in place under Division 15 and connected under Division 16. If they do not carry the FULL LOAD CURRENT to any motor, they shall be furnished, set in place and wired under Division 15.

- C. Control Wiring: Consists of wiring in pilot circuits of contact or starters, sensors, controllers, and relays, and wiring for valve and damper operators.
 - 1. Connections: Connections to all controls directly attached to ducts, piping and mechanical equipment shall be made with flexible connections.
- D. Starters: Provide magnetic starters for all three phase motors and equipment complete with:
 - 1. Control transformers.
 - 2. 120V holding coils.
 - 3. Integral hand-off-auto switch.
 - 4. Auxiliary contacts required for system operation plus one (1) spare.
- E. Remote Switches and Push Button Stations: Provide all remote switches and/or push button stations required for manually operated equipment (if no automatic controls have been provided) complete with pilot lights of an approved type lighted by current from load side of starter.
- F. Special Requirements: Motors, starters and other electrical equipment installed in moist areas or areas of special conditions, such as explosion proof, shall be designed and approved for installation in such areas with appropriate enclosure.
- G. Identification: Provide identification of purpose for each switch and/or push button station furnished. Identification may be either engraved plastic sign or permanent mounting to wall below switch, or stamping on switch cover proper. All such identification signs and/or switch covers in finished areas shall match other hardware in the immediate areas.
- H. Control Voltage:
 - 1. Maximum allowable control voltage 120V. Fully protect control circuit conductors in accordance with National Electrical Code.
 - 2. Provide 20A breakers in emergency panels under Division 16 as required for Building Management System Air Temperature Controls (BMS/ATC). Provide all control transformers, control wiring and connections to circuits under Section 15950 of Division 15.
- I. Related Requirements
 - 1. Section 16480: Electric Motors
 - a. Coordinate with efficiency requirements.
- J. Contractor must review all concrete embedded items (including conduit) with owner prior to placement.

GENERAL REQUIREMENTS
SECTION 01042
COORDINATION

PART 2 - PRODUCTS

2.01 MOTOR HORSEPOWER

- A. In general, all motors 1/2 HP and above shall be three phase, all motors less than 1/2 HP shall be single phase.
- B. Voltage and phase of motors as scheduled on the electrical drawings shall take precedence in the case of a conflict between the mechanical and electrical drawings or General Condition 2.01 A., above.
- C. Work under Division 15 includes coordinating the electrical requirements of all mechanical equipment with the requirements of the work under Division 16, before ordering the equipment.
 - 1. If motor horsepower is changed under the work of Division 15, without a change in duty of the motor's driven device, coordination of additional electrical work (if any) and additional payment for the work (if any) shall be provided under the section of Division 15 initiating the change. Increases or decreases in motor horsepower from that specified shall not be made without written approval from the Engineer.

PART 3 - EXECUTION

NOT USED.

END OF SECTION

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Work Included: This section establishes general requirements in addition to those indicated in the General Conditions of the Contract for Construction pertaining to cutting, fitting, and patching of the work required to:
 - 1. Make the several parts fit properly.
 - 2. Uncover work to provide for installation, inspection, or both, of ill-timed work.
 - 3. Remove and replace work not conforming to requirements of Contract Documents.
 - 4. Patch new construction into existing construction.
- B. Related Work:
 - 1. In addition to requirements specified, upon the Consultant's request, uncover work to provide for inspection of covered work, and remove samples of installed materials for testing.
 - 2. Do not cut or alter work performed under separate contract without the Consultant's written permission.

1.02 QUALITY ASSURANCE

- A. Perform all cutting and patching in strict accordance with pertinent requirements of the Specifications and, in the event no such requirements are determined, in conformance with the Consultant's written direction.
 - 1. Use skilled workmen to perform all cutting and patching work.
 - 2. Use methods least likely to damage existing surfaces and materials to remain, while providing proper surfaces to receive installation of repair, patching, and/or new work.
- B. Visual Quality:
 - 1. Do not cut and patch work exposed to public view, and the exterior and/or interior of the building in a manner that will result in an unacceptable appearance as determined by the Consultant.
 - 2. Do not cut and patch work in a manner that will result in obvious appearance that cutting and patching work was done.
 - 3. When cutting existing structural concrete, do not extend saw cuts beyond the corners of the required opening on either side of the opening.

1.03 EXISTING CONSTRUCTION

- A. Where cutting and patching of existing construction is required; prior to start of work, inform Owner of existing construction to be disturbed. Owner will determine if elements of existing construction contain asbestos. Do not proceed with work until after Owner has examined areas to be disturbed. Refer to Exhibit A, Project Pre-Inspection for Possible Presence of Asbestos for additional information concerning the possible presence of materials containing asbestos.

1.04 SUBMITTALS

- A. Submit proposed cutting and patching procedures in writing for the following categories of work prior to proceeding with this work:

1. Cutting new openings in existing structural concrete walls, parapets, and suspended slabs.
 2. Cutting new openings in existing roofs and roofing materials.
- B. Submittals shall comply with Section 01300.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Except as otherwise indicated in pertinent sections of these specifications, or as directed by the Consultant, use materials which are identical to existing materials in workmanship, appearance, and performance.
- B. If identical materials are not available, match existing as closely as possible, especially existing visual characteristics.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Before proceeding, inspect existing conditions, including elements subject to movement or damage during cutting, excavating, backfilling, and patching.
- B. After uncovering the work, inspect conditions affecting installation of new work.
- C. If uncovered conditions are not as anticipated or if existing construction is not as indicated on the Drawings, immediately notify the Consultant for further instructions.

3.02 PREPARATION

- A. Provide shoring, bracing, and support as required to maintain structural integrity of the project.
- B. Take all necessary action required to protect adjacent existing surfaces from damage due to the work of this section.
- C. Take all precautions necessary to protect existing surfaces and materials, new work, and the work of this section from damage due to adverse weather conditions.
- D. Provide temporary support of work to cut and adjacent work to prevent failure or damage due to the work of this section.
- E. Properly prepare substrate surfaces exposed during cutting as required to receive the work of this or other sections of these specifications in strict compliance with manufacturer's recommendations and these specifications.

3.03 EXECUTION

- A. Perform all required cutting and patching as required or reasonably implied under pertinent sections of these specifications.
- B. Perform cutting and demolition by methods which will prevent damage to other portions of the work and will provide proper finished installation complying with the specified tolerances and finishes.

3.04 PERFORMANCE

- A. Execute cutting and demolition by methods which will prevent damage to other work, and will provide proper surfaces to receive installation of repairs and new work. Saw-cut and otherwise isolate areas to be demolished.
- B. Repair or otherwise rebuild and/or construct all surfaces affected by cutting and demolition. Execute fitting and adjustment of products to provide totally finished installation to comply with tolerances, finishes, and profiles of adjacent surfaces, whether new or existing.
- C. Restore work which has been cut or exposed by demolition; install new construction in compliance with specifications for type of new work to be done or as required to match existing adjacent surfaces. In no case shall any exposed existing surface be left in a raw, marred, or unfinished surface.
- D. Refinish entire surfaces as necessary to provide an even finish.
 - 1. Continuous Surfaces: To nearest intersections.
 - 2. Assembly: Entire refinishing.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 - Specification sections, apply to work of this section.

1.02 SUMMARY:

- A. Section Includes:
 - 1. General administrative requirements and procedures and related applicable codes.

1.03 APPROVAL AND RECOMMENDATION AGENCIES:

- A. The University of Colorado at Boulder has jurisdiction for the interpretation and enforcement of code requirements for construction of projects.

1.04 CODES:

- A. All Contractors shall comply with all applicable codes, ordinances and regulations in effect at the time of bid openings.

APPROVED STATE BUILDING CODES

The following approved building codes and standards have been adopted by State Buildings Programs (SBP) as the minimum requirements to be applied to all state-owned buildings and physical facilities including capital construction and controlled maintenance construction projects.

The 2006 edition of the International Building Code (IBC)

(as adopted by the Colorado State Buildings Program as follows: Chapters 2-35 and Appendices C and I)

The 2006 edition of the International Mechanical Code (IMC)

(as adopted by the Colorado State Buildings Program as follows: Chapters 2-15 and Appendix A)

The 2006 edition of the International Energy Conservation Code (IECC)

(as adopted by the Colorado State Buildings Program)

The 2008 edition of the National Electrical Code (NEC)

(National Fire Protection Association Standard 70) (as adopted by the Colorado State Electrical Board)

The 2009 edition of the International Plumbing Code (IPC)

(as adopted by the Colorado Examining Board of Plumbers as follows: Chapter 1 Section 101.2, 102, 105, 107, Chapters 2-13 and Appendices B, D, E, F, and G)

The 2009 edition of the International Fuel Gas Code (IFGC)

(as adopted by the Colorado Examining Board of Plumbers as follows: Chapter 1 Section 101, 102, 105, 107, Chapters 2-8 and Appendices A, B and C)

Please consult the website www.dora.state.co.us/plumbing/index.htm for additional information on the revisions and exceptions to the IPC and IFGC and the inclusion of the new 105 and 107 sections. It is OSA/SBP's intent to adopt the 2009 International Building Code (IBC), the 2009 International Mechanical Code (IMC), and the 2009 International Energy Conservation Code (IECC) to be implemented at the start of the fiscal year on July 1, 2010.

The National Fire Protection Association Standards (NFPA)

(as adopted by the Department of Public Safety/Division of Fire Safety as follows with editions shown in parentheses: NFPA-1 (2006), 11 (2005), 12 (2005), 12A (2004), 13 (2002), 13D (2002), 13R (2002), 14 (2003), 15 (2001), 16 (2003), 17 (2002), 17A (2002), 20 (2003), 22 (2003), 24 (2002), 25 (2002), 72 (2002), 409 (2004), 423 (2004), 750 (2003) and 2001 (2004))

The 2004 edition of the ASME Boiler and Pressure Vessel Code

(as adopted by the Department of Labor and Employment/Boiler Inspection Section as follows: sections I, IV, VIII-Divisions 1 and 2 and 3, X and B31.1)

The 2004 edition of the National Boiler Inspection Code (NBIC)

(as adopted by the Department of Labor and Employment/Boiler Inspection Section)

The 2004 edition of the Controls and Safety Devices for Automatically Fired Boilers CSD-1

(as adopted by the Department of Labor and Employment/Boiler Inspection Section)

The 2004 edition of the Boiler and Combustion Systems Hazards Code, NFPA 85

(as adopted by the Department of Labor and Employment/Boiler Inspection Section)

The 2007 edition of ASME A17.1 Safety Code for Elevators and Escalators

(as adopted by the Department of Labor and Employment/Conveyance Section and as amended by ASME International)

The 2005 edition of ASME A17.3 Safety Code for Existing Elevators and Escalators

(as adopted by the Department of Labor and Employment/Conveyance Section and as amended by ASME International)

The 2005 edition of ASME A18.1 Safety Standard for Platform Lifts and Stairway Chairlifts

(as adopted by the Department of Labor and Employment/Conveyance Section and as amended by ASME International)

The current edition of the Rules and Regulations Governing the Sanitation of Food Service Establishments

(as adopted by the Department of Public Health and Environment/Colorado State Board of Health)

The 2003 edition of ICC/ANSI A117.1, Accessible and Usable Buildings and Facilities

(as adopted by the Colorado General Assembly as follows: CRS 9-5-101, as amended, for accessible housing)

Note: Additional codes, standards and appendices may be adopted by the state agencies and institutions in addition to the minimum codes and standards herein adopted by State Buildings Programs.

1. The 2006 edition of the IBC became effective on July 1 of 2007. Consult the state electrical and plumbing boards and the state boiler inspector and conveyance administrator and the Division of Fire Safety for adoption of current editions and amendments to their codes.
2. Projects should be designed and plans and specifications should be reviewed based upon the approved codes at the time of A/E contract execution. If an agency prefers to design to a different code such as a newer edition of a code that State Buildings Programs has not yet adopted, the agency must contact SBP for approval and then amend the A/E contract with a revised Exhibit D, Approved State Building Codes. Please note that the state plumbing and electrical boards enforce the editions of their codes that are in effect at the time of permitting not design.

3. The state's code review agents, or the State Buildings Programs approved agency building official, shall review all documents for compliance with the codes stipulated herein. Note: The Department of Public Health and Environment, Division of Consumer Protection will review drawings for food service related projects.
4. This policy does not prohibit the application of various life safety codes as established by each agency for specific building types and funding requirements. NFPA 101 and other standards notwithstanding, approved codes will supersede where their minimum requirements are the most restrictive in specific situations. If a conflict arises, contact State Buildings Programs for resolution.
5. It is anticipated that compliance with the federal Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG) and Colorado Revised Statutes Section 9-5-101 will be met by compliance with the 2006 International Building Code and ICC/ANSI A117.1. However, each project may have unique aspects that may require individual attention to these legislated mandates.
6. The 2003 edition of the International Building Code (IBC) is to be applied to factory-built nonresidential structures as established by the Division of Housing within the Department of Local Affairs.

A. **Appendices**

Appendices are provided to supplement the basic provisions of the codes. Approved IBC Appendices are as follows:

1. Mandatory
 - IBC Appendix Chapter C - Agricultural Buildings
 - IBC Appendix Chapter I - Patio Covers
2. Optional
 - Any non-mandatory appendix published in the International Building Code may be utilized at the discretion of the agency. Use of an appendix shall be indicated in the project code approach.

B. **Amendments**

None

C. **Referenced Codes**

1. While not adopted in entirety, portions of the following codes are referenced in the International Building Code (IBC), the International Mechanical Code (IMC), the International Energy Conservation Code (IECC) the International Plumbing Code (IPC), and the International Fuel Gas Code (IFGC). These following codes would be applied as reference standards.

2006 International Fire Code (IFC)
2006 International Existing Building Code (IEBC)

D. **Referenced Standards**

EVNT - Main Event Area - Install Video Boards
PR004877

The IBC, IMC, IECC, IPC and IFGC standards shall be utilized to provide specific, or prescriptive, requirements on how to achieve the requirements established in the code. These standards may be unique to the code or may be derived from other established industry standards. Recognized standards may also be used to show compliance with the standard of duty established by the code.

1.05 OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA):

- A. The Contractor shall have sole responsibility for compliance on the job site to all applicable portions of the Occupational Safety and Health Act. The Contractor is responsible for other regulatory requirements as they relate to occupational Health and Safety requirements. For example, NIOSH, ANSI, and MSA.
- B. Protection of life, health and public welfare as it relates to the execution of the construction contract is the responsibility of the Contractor. The Owner's Representative may, at their discretion, observe, inspect, or comment on plans, procedures, or actions employed at the project as they relate to safety of life, health or public welfare. If conditions are imposed by the Owner which interfere with, or imply actions detrimental to safety, written notice shall be returned to the Owner for action prior to affecting any unsafe conditions.
- C. Contractors shall use OSHA Lock Out / Tag Out procedures when working with energized equipment.
- D. All contractors entering confined spaces owned by CU or while conducting work under contract with CU shall develop a written program and utilize procedures that, at a minimum, comply with all federal, state and local confined space standards and all applicable regulatory requirements. Contractors shall, independent of the University, monitor the space to obtain their own data to ensure a safe entry and exit. Any data generated by a contractor's confined space entry, should be provided to the Facilities Management confined Space Program Manager.
- E. When contractors perform work that may involve Facilities Management controlled permit required confined spaces, Facilities Management will:
 - 1. Inform contractors of permit required confined spaces and that entry is allowed only after compliance with the confined space entry standard;
 - 2. Require contractors planning to enter a confined space to provide the Facilities Management Confined Space Program Manager in charge of that space, 48-hour advance notice of such planned entry. The contractors entry will be in accordance with the current Occupational Safety and Health Administration confined space entry standard and a signed document stating such, shall be provided to the FM Confined Space Program Manager prior to entry.
- F. The FM Confined Space Program Manager, following receipt of notice of contractor planned entry, will:
 - 1. Apprise contractor of the hazards identified in the confined space and of any prior experience that is documented on the space;
 - 2. Appraise the contractor of any precautions or procedures that CU has implemented for the protection of workers in or near the confined space;
 - 3. Coordinate entry operations with the contractor when both Facilities Management and contractor personnel are working in or around the confined space;
 - 4. Debrief the contractor at the end of the entry operations regarding hazards confronted or created.

1.06 HOT WORK PERMITS

- A. All contractors shall be required to obtain a Hot Work Permit, three (3) working days in advance, for work that involves welding, heat treating, grinding, thawing pipe, hot riveting, soldering and brazing, power driven fasteners and similar activities involving spark, flame or heat. Compliance with the requirements of the applicable fire code, the International Building Code, and NFPA Standard 51B are mandatory and all contractors performing hot work activities shall read and understand these code requirements. To obtain a current Hot Work Permit, go to website:
<http://fm.colorado.edu/firesafety/hotwork.html>

- B. Contractors shall read and comply with the procedures and requirements for Fire Watch, Fire Alarm Interruption and Fire Suppression Interruption as found on the following websites:

Fire Watch Procedures:

<http://fm.colorado.edu/firesafety/firewatch.html>

Fire Alarm and Detection System Interruption/Outage:

<http://fm.colorado.edu/firesafety/firealarmdetectsys.html>

Fire Suppression System Interruption/Outage:

<http://fm.colorado.edu/firesafety/firesuppressionsystems.html>

- C. No hot work shall be conducted in any campus facility without a hot work permit. Any person or firm who conducts hot work without a permit shall be fined one thousand dollars (\$1,000) for each occurrence and their non-permitted activities shall be stopped immediately until they obtain a hot work permit. Contractor shall be responsible for any damages caused as a result of improper hot work activities or the work stoppage.
- D. Individuals or firms who obtain a permit shall fully read, understand and implement the requirements of the permit. Any person or firm who conducts hot work without the full implementation of the permit requirements shall be fined five hundred dollars (\$500) the first time and one thousand dollars (\$1,000) for subsequent occurrences. When the requirements of the hot work permit are not being implemented, the improper activities shall be stopped immediately until a hot work permit is obtained. Contractor shall be responsible for any damages caused as a result of improper hot work activities or the work stoppage. Any contractor who is found to be in non-compliance a third time, will not be allowed to work on campus until further notice by Facilities Management.
- E. The campus inspectors, project managers and fire marshal shall have the authority to stop improper or non-permitted hot work activities.
- F. The Contractor shall notify the CU Fire Alarm Supervisor to deactivate all smoke alarms in the vicinity of the work prior to any demolition and construction work activity. Failure of the Contractor to comply with the smoke alarm deactivation requirement and cause a false alarm and arrival of the Boulder Fire Department shall be a \$400 fine per occurrence.

1.07 PERMITS

- A. The contractor must obtain a no fee building permit prior to starting work from Office Manager, Facilities Management at (303) 492-2904 in the Planning, Design and Construction Office, Research Laboratory No. 2, 1540 30th Street, Boulder, Colorado. Building permits are required on all projects except the following:
1. Fences not over 6 feet high & general landscape work
 2. Retaining walls which are not over 4 feet in height, unless supporting a surcharge of impounding Class I, II or III-A liquids
 3. Platforms, walks and driveways not more than 30 inches above grade and not over any basement or story below.
 4. Painting, papering, and similar finish work that meet the requirements of chapter 8 of UBC. (Uniform Building Code).
 5. Temporary motion picture, television and theater stage sets and scenery. Review for fire-safety issues is required.
- B. The contractor must post the permit(s) in a prominent location at the jobsite including all inspection reports. The contractor shall have an updated set of contract documents available at the jobsite for all inspections.

1.08 INSPECTIONS

- A. The Contractor must schedule all required inspections 48 hours in advance by calling (303) 492-2922. CU or their designated inspectors will complete these inspections within 48 hours with the exception of weekends and state holidays.
- B. The contractor is required to arrange for the following inspections:
 - 1. Required inspections: General. Reinforcing steel or structural framework of any part of any building or structure shall not be covered or concealed without first obtaining the approval of the building official.
 - 2. Lath or gypsum board inspection: To be made after lathing and gypsum board, interior and exterior, is in place, but before any plastering is applied or before gypsum board joints and fasteners are taped and finished.
 - 3. Final inspection: To be made after finish grading and the building is completed and ready for occupancy.
 - 4. Special inspection: Special inspection may be required on special projects and special types of construction.
 - 5. Re-inspections: A re-inspection fee may be assessed for each inspection or reinspection when such portion of work for which inspection is called is not complete or when corrections called for are not made.
- C. The Contractor will be responsible for all cost related to re-inspections and will be billed at a rate of \$50.00 per hour for CU re-inspections and at the testing agency bill-out rate for other re-inspections.

1.09 UNIVERSITY OF COLORADO SEXUAL HARASSMENT POLICY

- A. Contractors should be aware of and review the University of Colorado at Boulder's policies that prohibit discrimination and harassment on the basis of race, color, national origin, sex, age, disability, creed, religion, sexual orientation or veteran status. These policies are located on the web at: <http://www.colorado.edu/odh/> Contractor personnel must adhere to these policies and conduct themselves in a manner that does not discriminate or harass as a result of interacting with an around the University of Colorado faculty, staff and students and visitors.

1.10 FIRE ALARM INTERRUPTION

- A. Contractor shall contact CU Fire Alarm Systems Supervisor at 303-492-0633 prior to all interruptions or shutdowns of fire alarm systems. Interruptions or shutdowns shall be scheduled three (3) working days in advance with CU Fire Alarm Systems Shop, CU Project Manager and building proctor. Contractor shall provide a fire watch as directed by CU Fire Alarm Systems Shop during interruption or shutdown.
- B. The Contractor shall be responsible for preventing nuisance alarm due to activities at their work site. Common sources of nuisance alarms are:
 - 1. Smoke (soldering, welding, cooking, etc.)
 - 2. Grinding
 - 3. Dust (drilling, sweeping, canister vacuums, sand blasting, etc.)
 - 4. Water leaking (plumbing leaks, overflows)
 - 5. Water sprayed on or near detectors (pressure washing or cleaning with water)
 - 6. Popcorn or other food burning in microwaves
 - 7. Static electricity (covering or uncovering detectors)
 - 8. Changing filters on air handling units (dust)
 - 9. Steam (leaks, pressure pop-offs)
 - 10. Broken or frozen sprinkler heads
 - 11. Sprinkler drain valves turned by mistake

12. Vandalism

Precautions to prevent nuisance alarms are:

1. During construction projects, treat all buildings, except totally new construction, as though they were occupied buildings with live systems.
2. Do not assume that all detectors are in plain sight. Contact University personnel for verification.
3. Maintain dust control measures per UCB Standards:
 - a. Maintaining barriers
 - b. Covering air returns
 - c. Asking CU personnel to cap or disable smoke detectors (Note any capping or disabling of fire safety devices is to be done ONLY by CU personnel, not contractors.)
 - d. Avoiding recirculation of dust or smoke through the building air handling system.
4. Follow campus hot work procedures. Refer to specification Section 01060, paragraph 1.06.
3. Do not expose fire alarm devices to water or extreme temperatures.
4. Contact Fire Systems Group for any actions that affect fire detection, alarm, and suppression systems.

1.11 STORMWATER MANAGEMENT PLAN (SWMP)

- A. Stormwater Management Plan (SWMP): Prior to any construction activity disturbing one acre of land or more, an approved SWMP and a Stormwater Permit for Construction Activity application from the Colorado Department of Public Health and Environment (CDPHE) are required. The SWMP shall be prepared in accordance with the CDPHE requirements for "Contents of the Stormwater Management Plan" and the UDFCD's Urban Storm Drainage Criteria Manual, Volume 3, "Best Management Practices" (UDFCD Drainage Criteria Manual). Stormwater quality management and erosion control measures are to be constructed and maintained in accordance with the SWMP and the UDFCD Drainage Criteria Manual.

1.12 UTILITY LOCATES

Contractor MUST CALL 811 (or 1-800-922-1987) for utility locates BEFORE DIGGING on any project at the University of Colorado at Boulder. This includes even small projects such as, but not limited to, planting trees or shrubs, sidewalk removal/installation or fence post installation. Digging without calling can disrupt service to the campus or surrounding neighborhoods and potentially result in fines and repair costs.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

- A. Work Included:
 - 1. Specification system format.
 - 2. Grammar (syntax) description.

1.02 DESCRIPTION

- A. These specifications have been derived from automated specification systems, and include minor deviations from format and traditional writing forms. Such deviations must be recognized as a normal result of this production technique, and no other meaning will be implied or permitted.
- B. Imperative language of the technical sections is directed to the Contractor. The term "provide" used repeatedly in the text is defined to mean..."furnish and install, complete, in place and ready for operation and use unless specifically indicated otherwise."
- C. Specifications are of abbreviated, simplified or streamlined type and include incomplete sentences. Omissions of work or phrases such as "the Contractor shall", "in conformity therewith," "shall be," "as noted on the Drawings", "A", "The", are intentional. Supply omitted words or phrases by inference in same manner as they are when "Note" occurs on Drawings. Supply words "on the Drawings" by inference when "as indicated" is used with sentences or phrases.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 - Specification sections, apply to work of this section.

1.02 SUMMARY:

- A. Section Includes:
 - 1. General administrative requirements and procedures for Hazardous Communication Program.
- B. Related Sections:
 - 1. Summary of Work: Section 01010.

1.03 WORK BY OWNER:

- A. Asbestos: **(THIS BUILDING IS EXEMPT)**
 - 1. The Owner has completed an Environmental Site Assessment to identify asbestos containing materials and other immediate Health and Safety items. Do not begin work until Form Exhibit A (copy following the Supplementary General Conditions) has been executed. Where asbestos materials or other hazardous conditions are known to exist in locations affected by this project, remediation measures will be taken by the Owner under separate contract. The Contractor shall coordinate his sequence and schedule with that of the environmental remediation work.
 - 2. In the event that the Contractor encounters any material on the site which is reasonably believed hazardous, which has not been rendered harmless, the Contractor shall:
 - a. Stop work immediately in affected areas.
 - b. Report the condition in writing to the Department of Facilities Management Project Administrator.
 - c. Report the condition in writing to the Architect.
 - d. Resume work only under the provisions of this section.

1.04 SUBMITTALS:

- A. Material Safety Data Sheets (MSDS):
 - 1. Copies of all material safety data sheets for all applicable products, including but not limited to; paint, adhesives, mastics, solvents, and finishes, etc., shall be retained on site by the Contractor for all applicable products used during the construction and/or remodeling work. Furnish copies of all MSDS's to the Owner and Architect and include in the Project Record Document submittal.

1.05 QUALITY ASSURANCE:

- A. Asbestos containing materials may exist within the general project area where such materials are not expected to be disturbed during the work. The Contractor shall review the Environmental Health and Safety Environmental Site Assessment Form at the project site and become familiar with known asbestos and hazardous containing materials in the work areas.

1.06 PROJECT/SITE CONDITIONS:

A. Hazard Communication Requirements:

1. All Contractors are responsible for compliance with mandatory federal rules and regulations concerning Hazard Communication, including, but not limited to those regulations contained in 29 CFR 1910.1200 Hazard Communication, 1910.146 Confined Space, 1910.147 Lock-out Tag-out, 1910.1101 Asbestos, and 1926.62 Lead. Contractor and all subcontractors working at sites under the control of the Owner shall make available to the Architect, upon request, copies of the Hazard Communication Program used by their firm. In addition to this requirement, all regulations related to Multi-employer workplaces shall be adhered to. These regulations are found in 29 CFR 1910.1200, (e) (2) (I) through (e) (4) specifically:

(e) (2) Multi-employer workplaces. Employers who produce, use, or store hazardous chemicals at workplace in such a way that employees of other employer(s) may be exposed (for example, employees of a construction contractor working on site) shall additionally ensure that the hazard communication programs developed and implemented under paragraph (e) include the following:

(e) (2) (i) The methods the employer will use to provide the other employer(s) with a copy of the material safety data sheet, or to make it available at a central location in the workplace, for each hazardous chemical the other employer(s)' employees may be exposed to while working;

(e) (2) (ii) The methods the employer will use to inform the other employer(s) of any precautionary measures that need to be taken to protect employees during the workplace's normal operating conditions and in foreseeable emergencies; and,

(e) (2) (iii) The methods the employer will use to inform the other employer(s) of the labeling system used in the workplace

(e) (3) The employer may rely on an existing hazard communication program to comply with these requirements, provided that it meets the criteria established in this paragraph (e).

(e) (4) The employer shall make the written hazard communication program available, upon request, to employees, their designated representatives, the Assistant Secretary and the Director, in accordance with requirements of 29 CFR 1910.20 (e).

2. The referenced regulations were excerpted from 29 CFR 1910.1200. This excerpt shall not be relied upon for compliance with mandatory federal, state and local regulations. The Contractor shall comply with all such regulations and shall be solely liable for insuring that all requirements under applicable regulations are met.

PART 2 - PRODUCTS (Not applicable)

PART 3 - EXECUTION

3.01 EXAMINATION:

A. Asbestos and Hazardous Materials Discovery:

1. The Contractor is cautioned to be alert to the possibility that his work may uncover asbestos- containing or hazardous materials. If suspected materials are found, the Contractor shall notify the Owner and stop all work in the area immediately. If the

suspected materials prove to contain asbestos or hazardous materials, the Owner will arrange to have the materials abated in a timely manner.

GENERAL REQUIREMENTS
SECTION 01121

DIVISION 1 - PAGE 3
HAZARDOUS MATERIAL PROCEDURES

3.02 HAZARDOUS MATERIALS/EQUIPMENT REMOVAL:

A. Definition:

1. Removal of hazardous materials/equipment is extremely dangerous. Hazardous materials/equipment is defined to include, but not limited to the following:
 - a. Fume hoods
 - b. Hood exhaust duct work
 - c. Exhaust fans
 - d. Laboratory casework and equipment
 - e. PCB ballast's
 - f. Mercury and Sodium Vapor Lights
 - g. Adjacent material that could come in contact with workers or public.

B. Protection:

1. Hazardous materials/equipment removal shall include the protection of personnel, material, environment and safe legal disposal of the equipment; and further includes the following:
 - a. Notification of Project Administrator and appropriate Environmental Health and Safety Unit
 - b. Proper protective clothing for personnel involved in the removal.
 - c. Appropriate emergency and first aid facilities.
 - d. Removal procedures shall be accomplished during minimal occupancy of the remainder of the building on the weekends or at night.

C. Disposal:

1. All equipment related to the use, storage or processing of hazardous materials/equipment shall be removed and properly disposed of under the direct, full-time supervision of a qualified Laboratory Specialist fully conversant with the chemistry and properties of the material/equipment involved. Certification is required. Contractors are responsible for the removal of all hazardous materials/equipment and chemicals from the work site as well as proper disposal of all hazardous waste generated by their project.
2. Hazardous waste disposal must include prior notification to the Department of Environmental Health and Safety in order to verify that the appropriate procedures and documentation are used. Copies of all paper work for shipping and disposing of these materials (hazardous waste manifests, land disposal restrictions, etc.) will be provided by the Contractor to the Department of Environmental Health & Safety (303) 492-6025. Where appropriate, the Main Campus EPF ID COD007431505 will be used for these shipments.
3. Hazardous chemicals, waste, and other pollutants may not be discharged to the sanitary or storm sewer systems at anytime. Releases to the environment must be reported to CUPD/EH&S immediately.

3.03 ENVIRONMENTAL RESPONSIBILITIES

A. Environmental and Safety Issues and Practices.

Contractors working on the UCB campus are required to comply with all applicable University, City, State and Federal environmental regulations and safety standards. Hazardous and regulated materials must be managed and disposed of properly. Work sites must control dust, debris and run-off, and pay special attention to preventing any pollutants from entering the storm

sewer or surface water collection systems. These systems ultimately drain into our creeks and waterways.

- B. Contractor will be required to sign an Environmental Responsibilities form. The contractor is responsible for notifying all subcontractors of the responsibilities identified on the form. A copy of this form must be posted, throughout the duration of the project, in a visible area for all workers to see.

END OF SECTION

PART 1 - GENERAL

1.01 REQUIREMENTS

- A. The types and minimum requirements for project meetings are included but are not necessarily limited to the following categories:

Pre-construction meeting
Progress and Coordination meetings
Specially called meetings

- B. The pre-construction meeting will be scheduled within fifteen days after date of Notice to Proceed, at a central site location designated by the Owner and convenient for all parties.

1. Attendance:

- a. Owner's Representative
- b. Consultant and his sub-consultants, as applicable
- c. Contractor's Superintendent
- d. Major Subcontractor(s)
- e. Others as appropriate

2. Suggested Agenda:

- a. Distribution and discussion of:
List of major subcontractors and suppliers
Projected construction schedules
Critical work sequencing
Major equipment deliveries and priorities
Project Coordination
Designation of responsible personnel
- b. Procedures and processing of:
Field decisions
Proposal requests
Submittals
Change Orders
Applications for Payment
- c. Adequacy of Distribution of Contract Documents
- d. Procedure for Maintaining Record Documents
- e. Inspections
- f. Stormwater Management Plan (SWMP)

- C. The Architect/Engineer will: Record the minutes; including significant proceedings and decisions.

- D. The Contractor shall schedule and administer subcontractor and vendor pre-construction meetings throughout progress of the work. He will:

1. Prepare agenda for meetings.
2. Distribute written notice of each meeting four days in advance of meeting date.
3. Make physical arrangements for meetings.
4. Preside at meeting.
5. Record the minutes; including significant proceedings and decisions.
6. Representatives of Contractors, Subcontractors, and Suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.

7. Use of Premises:
Office, work, staging and storage areas
Owner's requirements
8. Temporary construction Facilities, Utilities, Controls and Construction Aids
9. Safety, First-aid, Security and Housekeeping Procedures
10. Administrative Procedures and Documents as Required by Owner

1.02 PROGRESS AND COORDINATION MEETING

The Contractor will schedule and administer job progress and coordination meeting at the site.

- A. Attendance:
 1. Owner as needed
 2. Consultant and his sub-consultants as needed
 3. Subcontractor as appropriate to the agenda
 4. Suppliers as appropriate to the agenda
 5. Others
- B. Suggested Agenda:
 1. Review of work progress since previous meeting.
 2. Field observations, problems and conflicts.
 3. Problems which impede Construction Schedule.
 4. Review of off-site fabrication and delivery schedules.
 5. Corrective measures and procedures to regain projected schedule.
 6. Revisions to Construction Schedule.
 7. Coordination of schedules.
 8. Progress and schedule during succeeding work period.
 9. Review submittal schedules and expedite as required.
 10. Maintenance of quality standards.
 11. Pending changes and substitutions.
 12. Review proposed changes for:
 - a. Effect on Construction Schedule and on completion date.
 - b. Effect on other contracts of the Project.
- C. The Architect/Engineer shall record and distribute the minutes of all progress meetings throughout the construction period and shall visit the site a minimum of once every two weeks. The Architect/Engineer shall average one visit per week during construction.

The structural engineer shall visit the site immediately prior to every major structural concrete slab pour; every major foundation wall pour; at least twice for each major segment of work [i.e., caissons, columns, steel roof joists, etc].

END OF SECTION

GENERAL REQUIREMENTS

SECTION 01300
SAMPLES

SUBMITTALS, SHOP DRAWINGS, PRODUCT DATA, AND

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Submit shop drawings, product data and samples as required by various sections of the specifications.

1.02 QUALITY ASSURANCE

- A. Shop Drawings:
 - 1. Drawings shall be presented in a clear and thorough manner.
 - 2. Details shall be identified by reference to sheet, detail, schedule, or room numbers shown on drawings.
- B. Product Data:
 - 1. Preparation:
 - a. Clearly mark each copy to identify pertinent products or models.
 - b. Show performance characteristics and capabilities.
 - c. Show dimensions and clearances required.
 - d. Show wiring or piping diagrams and controls.
 - 2. Manufacturer's standard schematic drawings and diagrams.
 - a. Modify drawings and diagrams to delete information that is not applicable to the work.
 - b. Supplement Standard information to provide information specifically applicable to the work.
- C. Samples:
 - 1. Office samples shall be of sufficient size and quantity to clearly illustrate:
 - a. Functional characteristics of the product with integrally related parts and attachment devices.
 - b. Full range of color, texture and pattern
- D. Mock-ups:
 - 1. Provide complete mock-up of exterior materials to be incorporated into the work.
 - a. Mock-up shall include a sample of all materials used in exterior construction, whether specified elsewhere or not in these documents, including but not limited to, masonry, stone, window systems, precast concrete, roof systems, flashing, sealants, masonry paving, paint and other readily visible materials.
 - b. Secure Owner approval of mock-ups prior to ordering and placement of materials. Modify mock-ups as directed by the Architect or Owner until acceptable.
 - c. Confirm exact mock-up(s) required by Owner prior to fabrication of mock-up(s).
 - 2. Remove mock-up at the conclusion of the project or when directed by the Architect.
 - a. Restore or finish site to finish condition indicated on the Drawings.
- E. Responsibilities of the Contractor:
 - 1. Review shop drawings, product data, samples and project record drawings for specification performance prior to submission.

GENERAL REQUIREMENTS

SECTION 01300
SAMPLES

SUBMITTALS, SHOP DRAWINGS, PRODUCT DATA, AND

- Documents.
2. Determine and Verify:
 - a. Field measurements
 - b. Field construction criteria
 - c. Catalog numbers and similar data
 - d. Conformance with specifications
 3. Coordinate each submittal with requirements of the work and of the Contract Documents.
 4. Notify the Consultant in writing, at the time of submission, of any deviations in the submittals for requirements of the Contract Documents.
 5. Begin no fabrication or work that requires submittals until return of submittals with Consultant's acceptance.
 6. Contractor's responsibility for deviations in submittals from requirements of Contract Documents is not relieved by Consultant's review of submittals.
 7. Contractor shall stamp, sign or initial, and date each submittal to show compliance with the Contract Documents prior to submittal to the Consultant.

1.03 SUBMITTALS

- A. Make submittals promptly in accordance with approved schedule and in such sequence as to cause no delay in the work.
- B. Number of Submittals Required:
 1. Submittals shall be made electronically to the University project manager for distribution.
- C. Resubmission Requirements:
 1. Make any corrections or changes in the submittals required by the Consultant and resubmit until accepted.
 2. Shop drawings and product data:
 - a. Revise initial drawings or data and resubmit as specified for initial submittal.
 - b. Indicate any changes that have been made, other than those requested by the Consultant.
 3. Samples: Submit new samples as required for initial submittal.
- D. Distribution:
 1. Distribute reproductions of approved shop drawings and copies of product data to affected subcontractors and retain one copy for use at the job-site.
 2. Distribute approved samples as directed.
- E. Consultant's Duties:
 1. Review submittals with reasonable promptness and in accordance with schedule.
 2. Review of separate item does not constitute review of an assembly in which item functions.
 3. Affix stamp and initials or signature, and indicate requirements for resubmittal or acceptance of submittal.
 4. Return submittals to the Contractor for distribution or for resubmission.
- F. Schedule of Values and pay applications:
 1. Submit typed schedule on State Form SC7.2; Contractor's standard form or media-driven printout will be considered on request.
 2. Format: Table of Contents of this Project Manual.

3. Include in each line item a directly proportional amount of Contractor's overhead and profit.

GENERAL REQUIREMENTS

DIVISION 1 - PAGE 3

SECTION 01300
SAMPLES

SUBMITTALS, SHOP DRAWINGS, PRODUCT DATA, AND

- G. Schedule of Submittals: The Contractor shall submit the submittals required by the specifications. The Contractor shall develop a submittal schedule that confirms the submittals and the time frame for review by the consultants.

H. Construction Schedule:

1. The Contractor shall submit a critical-path method (CPM) construction schedule prior to start of construction activities. The CPM schedule shall include notice to proceed, submittal activities, construction activities, change order work (when applicable), close-out, testing, demonstration, and acceptance. The CPM shall correlate specifically to the schedule of values line items and be cost loaded.

Float, slack time, or contingency within the schedule (i.e., the difference in time between the project's early completion date and the required contract completion date), and total float within the overall schedule, is not for the exclusive use of either the principal representative or the Contractor, but is jointly owned by both and is a resource available to and shared by both parties as needed to meet contract milestones and the contract completion date.

The Contractor will be required to submit an as-built progress CPM schedule with each progress billing. This CPM schedule will be the basis for making progress payments. The level of detail and quantity of work activities in the CPM schedule should be negotiated with the principal representative prior to starting construction.

I. Request for Information (RFI):

1. The Contractor will be responsible for submitting RFIs on AIA form G716 or similar. The RFI should identify in writing any unclear, inconsistent, or conflicting item in the documents that could not be answered by thorough review by the Contractor or subcontractors. The RFI should include a description of the item and a proposed solution. The RFI should indicate schedule or cost impact, if any. Contractor shall be Required to submit cost or schedule impact within seven days of receipt of the RFI response. Each RFI shall be numbered in sequence.

L. Weekly Logs:

1. The Contractor shall provide an updated RFI, change request, and submittal logs at weekly construction meetings. Contractor shall provide a 2-week detailed construction schedule at the weekly construction meeting.

PART 2 - MATERIALS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

PART 1 - GENERAL

1.01 SUPPLEMENTAL TESTING

If required, the following testing shall be performed at the expense of the contractor installing the material being tested:

- A. Material Substitution: Any tests of basic material or fabrication equipment offered as a substitute for specified item on which a test may be required in order to prove its compliance with the specifications.
- B. Mechanical/Electrical: Tests on mechanical and electrical systems required to insure their proper installation and operation.
- C. Any test that fails shall be paid for by the installing contractor subject to the following conditions:
 - 1. Quantity and nature of tests will be determined by the Consultant.
 - 2. All test shall be done in the presence of the Owner or his representative.
 - 3. Proof of noncompliance will make the installing contractor liable for any corrective action which the Owner feels is prudent including complete removal and replacement of defective material.

Nothing contained herein is intended to imply that the installing contractor does not have the right to have tests performed on any material at any time for his own information and job control so long as the Consultant or Owner does not assume responsibility for costs or for giving them consideration when appraising quality of materials.

- D. The Consultant shall determine the type and number of tests to be performed on the project.

1.02 TEST REPORTS

Reports of all tests made by testing laboratories shall distributed by the testing laboratory as follows:

- 1 copy - Contractor
- 1 copy - Applicable supplier or subcontractor
- 1 copy - Owner
- 1 copy - Consultant
- Other copies - as directed

1.03 QUALITY CONTROL SYSTEM

- A. General: The contractor shall establish a quality control system to perform sufficient inspection and tests of all items of work, including that of all subcontractors, to ensure conformance to the Contract Documents for materials, workmanship, construction, finish, functional performance and identification. This control shall be established for all construction except where the Contract Documents provide for specific compliance tests by testing laboratories or Consultants employed by the Owner.

The quality control system is the means by which the Contractor assures that construction complies with the requirements of the Contract Documents. Controls shall be adequate to cover all construction operations and should be keyed to the proposed construction schedule.

- B. The Contractor shall designate a quality control representative on staff to review the work to insure compliance with the contract documents by weekly jobsite visits for observation. The designated employee shall not be involved in the performance of the work. The quality control representative shall review the work and make necessary corrections to bring the work into compliance prior to scheduling the Architect for the final punchlist review.
- C. Records: The Contractor shall maintain correct records on an appropriate form for all inspections and tests performed, instruction received from the Owner and actions taken as a result of those instructions. These records shall include evidence that the required inspections or tests have been performed (including type and number of inspections or tests, nature of defects, causes for rejection, etc.) proposed or directed remedial action, and corrective action taken. The Contractor shall document inspections and tests as required by each Section of the Specifications.

1.04 INDEPENDENT TESTING AGENCY SERVICES

- A. The Owner will employ and pay for the services of an independent Testing Agency to perform the Inspections, special inspections, tests and other services when required by sections of the specification. Services shall be performed in accordance with requirements of governing authorities and with specified standards.
 - 1. Contractor shall cooperate with Testing Agency personnel and shall furnish tools, sample of materials, design mixes, equipment and assistance as requested.
 - 2. Contractor shall provide and maintain, for the sole use of the Testing Agency, adequate facilities for the safe storage and proper curing of concrete testing cylinders on the project site for the first 24 hours after casting as required by ASTM C 31, Method of Making and Curing Concrete Test Specimens in the field.
 - 3. Contractor shall notify Testing Agency sufficiently in advance of operations to allow for completion of initial tests and proper assignment of inspection personnel.
 - 4. Contractor shall notify the testing agency sufficiently in advance of cancellation of required testing operations. The Contractor shall assume responsibility for costs incurred due to the failure to provide such notice.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to work of this section.

1.02 DESCRIPTION OF REQUIREMENTS

- A. This section of the General Requirements outlines the basic requirements for temporary services, utilities, and facilities which will indirectly enable adequate construction progress and processes, and will accommodate other necessary activities at the project site except as otherwise indicated, the costs of providing and using temporary services are included in the Contract Sum.

1.03 QUALITY ASSURANCE

- A. Comply with governing regulations and utility company regulations and recommendations for the construction of temporary facilities, including but not necessarily limited to, code compliance, permits, inspections, testing, and health and safety compliance.

1.04 SITE CONDITIONS

- A. Provide Temporary facilities and services at the time first needed at the site and maintain, expand, and modify the facilities as needed throughout the construction period and do not remove until no longer needed.

PART 2 - EXECUTION

2.01 TEMPORARY FACILITIES

- A. Sanitary Facilities: Toilet rooms in existing buildings or in new construction may be used.
- B. Fire Extinguisher:
 - 1. Except as otherwise indicated or required, comply with the applicable recommendations of NFPA No. 10 "Portable Fire Extinguisher" for each area of each construction activity whenever combustible materials, flammable liquids, and similar exposures to possible fires are present.
 - 2. Locate extinguisher where most convenient and effective for the intended purposes. Store combustible materials in recognized fire-safe locations and containers.
- C. Protection:
 - 1. Barricades, Warning Signs, and lights: Comply with recognized standards and code requirements for the erection of substantial and structurally adequate barricades wherever needed to prevent accidents and losses. Paint with appropriate colors, graphics and warning signs to inform personnel at the site and the general public where exposure exists of the hazard being protected. Provide lighting where appropriate and needed for the recognition of the facility, including flashing red lights where appropriate.

D. Miscellaneous Facilities:

1. Provide ladders, ramps, and temporary stairs for access to all levels of the construction for general access by all trades. Individual contractors and subcontractors shall furnish their own stepladders, scaffolds, staging, work platforms, and other facilities for use of their workmen and as necessary for safety of all personnel.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Products.
 - 2. Transportation and Handling.
 - 3. Storage and Protection.
 - 4. Manufacturer's Instructions.
 - 5. Product Options.
 - 6. Products List.
 - 7. Substitutions.
 - 8. Systems Demonstration.
- B. Related Sections:
 - 1. Section 01400 - Quality Control.
 - 2. Section 01730 - Operation and Maintenance Data.

1.02 QUALITY ASSURANCE

- A. Conform to applicable specifications and standards.
- B. Comply with size, make, type and quality specified, or as specifically approved in writing by the Consultant.
- C. Manufactured and Fabricated Products:
 - 1. Two or more items of the same kind shall be identical, by the same manufacturer.
 - 2. Equipment capacities, sizes and dimensions shown or specified shall be adhered to unless variations are specifically approved in writing.

1.03 TRANSPORTATION AND HANDLING

- A. Arrange deliveries of products in accord with construction schedules, coordinate to avoid conflict with work and conditions at the site.
- B. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.

1.04 STORAGE AND PROTECTION

- A. Store products in accordance with manufacturer' instruction, with seals and labels intact and legible.
- B. Arrange storage to provide access for inspection. Periodically inspect to assure products are undamaged, and are maintained under required conditions.

1.05 MANUFACTURER'S INSTRUCTIONS

- A. When Contract Documents require that installation of work shall comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to parties involved in the installation, including one copy to the Consultant and one copy to the Contractor.

- B. Perform work in accord with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents.

1.06 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Any product meeting those standards.
- B. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not specifically named.
- C. Consultant will review requests for substitutions with reasonable promptness, and notify, by Addendum, of the decision to accept or reject the requested substitution.

1.07 PRODUCT LIST

- A. Within 15 days after signing of agreement, submit complete list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.

1.08 SUBSTITUTIONS

- A. Will only be considered prior to bid or in the event that Equipment is not available.**

1.09 SYSTEMS DEMONSTRATION

- A. Prior to final inspection, demonstrate operation of each system to Consultant and Owner.
- B. Instruct Owner's personnel in operation, adjustment, and maintenance of equipment and systems, using the operation and maintenance data as the basis of instruction.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED

END OF SECTION

PART 1 - GENERAL

1.01 SUBSTANTIAL COMPLETION AND FINAL INSPECTION

- A. The Contractor shall comply with procedures stated in the General Conditions of the Contract for Notice of Completion, Final Inspection, Notice of Substantial Completion and Notice of Acceptance.
- B. Should the Architect/Engineer or the Principle Representative determine that the work is not substantially complete, or the punch list items exceed 25, he will immediately notify the Contractor, in writing, stating reasons. After Contractor completes work, he shall resubmit certification and request for final inspection. The Contractor will be responsible for all costs beyond two Architect/Engineer walk-throughs.
- C. Owner may occupy designated portions of the Project under provisions stated in the General Conditions of the Contract.

1.02 CLOSE-OUT FORMS

The Architect/Engineer will complete the Notice of Approval of Beneficial Occupancy, Closing-out Checklist and Contract Close-out forms and forward them to the Contractor. Comply with procedures stated in General Conditions of the Contract.

1.03 FINAL SETTLEMENT AND PAYMENT

- A. Contractor shall comply with procedures stated in the General Conditions of the Contract before final settlement and payment are made.
- B. The Contractor shall also submit the following prior to the final application for payment:
 - 1. Contractor's Affidavit of Payment of Debit and Claims: AIA G706.
 - 2. Contractor's Affidavit of Release of Liens (claims): AIA G706A, with:
 - a. Consent of Surety to final payment: AIA G707
 - b. Contractor's release of waivers of claims.
 - c. Separate release of waivers of claims for subcontractors, suppliers and others with claim rights, against property of owner, together with list of those parties.

1.04 GUARANTEE INSPECTION

- A. The Contractor shall comply with procedures stated in the General Conditions of the Contract for Guarantee Inspections after completion of the work.

1.05 WARRANTIES AND SPECIAL GUARANTEES

The Contractor shall comply with procedures and criteria outlined in the General Conditions of the Contract for all warranties and special guarantees of the work.

1.06 OPERATING AND MAINTENANCE DATA

- A. Refer to Section 01730 - Operating and Maintenance.
- B. Mechanical - By Mechanical Contractor: See Division 15.

- C. Electrical - By Electrical Contractor: See Division 16.

1.07 DEMONSTRATIONS

- A. Refer to Section 01730 - Operating and Maintenance
- B. Mechanical - By Mechanical Contractor: See Division 15
- C. Electrical - By Electrical Contractor: See Division 16.

1.08 SPARE PARTS AND MAINTENANCE MATERIALS

- A. Provide products, spare parts, and maintenance materials in quantities specified in each Section, in addition to that used for construction of work. Coordinate with Owner, deliver to Project site and obtain receipt prior to final payment.
- B. At the completion of the project, all loose keys for hose bibs; adjustment keys and wrenches for door closers and panic hardware; and keys for electric switches, electrical panels, etc., shall be accounted for by the Contractor and turned over to the Owner.

END OF SECTION

PART 1 - GENERAL

1.01 CLEANING

- A. Clean-up During Construction: Each contractor shall keep the building and premises free from all surplus material, waste material, dirt and rubbish caused by his employees or work, and at the completion of his work he shall remove all such surplus material, waste material, dirt and rubbish, as well as his tools, equipment and scaffolding, and shall leave his work clean and spotless, unless more exact requirements are specified. In case of dispute, the owner may remove all such items and charge the cost of such removal to the contractor.

Each sub-contractor shall perform his clean-up daily and shall transport his rubbish to an on-site location designated by the Contractor who will arrange for its removal.

- B. Cleaners: With the exception of clean-up of the site and cleaning specifically assigned to Contractors under various sections of the specifications, all final clean-up of exterior and interior of the building shall be done by professional cleaners.

C. Final Clean-up:

1. Exterior: In addition to items specified below, any new surfaces on exterior, concrete, metal, etc., shall be carefully and thoroughly cleaned.
2. Glass: Both sides of all glass in work areas shall be carefully and thoroughly cleaned by professional window cleaners and left absolutely clean and free from paint, grease, dirt, etc.
3. Hardware: Clean and polish all hardware and leave clean and free from paint, grease, dirt, etc.
4. Plumbing: Clean and polish all plumbing fixtures, fittings, and exposed plated piping. Leave clean and free from paint, grease, dirt, etc. Remove all labels.
5. Electrical: Clean and polish all electric fixtures, including glassware, switch plates, etc. and leave clean and free from paint, grease, dirt, etc.
6. Equipment: Carefully and thoroughly clean all items of equipment, mechanical, electrical, cabinets, ductwork, etc.
7. Floors: Thoroughly clean all floors. Vacuum and clean carpeting. Shampooing of pre-existing carpet is required once project is complete. Contractor is responsible for this.
 - a. Contractors are responsible for cleaning (stripping floors if necessary) then applying the required two coats of sealer and three coats of finish before releasing the building for occupancy. Facilities Management will provide a contact person for help concerning campus standards free of charge. Or Custodial floor care services may be sub-contracted out through Facilities Management's work order system.
 - b. Facilities Management Approved Sealers and Finishes for Vinyl Tile Flooring:

CU requires floor care products to be from the same product line. (Different brands may interact disastrously).

All of these products may be ordered through Construction Stores, but these products not stocked at Stores, please place orders at least two weeks in advance.

Strippers:	JohnsWax Freedom Full Impact	Butchers: Time Buster	Airkeim: Air Strip
Sealers:	Over & Under Technique	Iron Stone	Laser, Gemini
Finishes:	Show Place Above	MainStay	Laser, Gemini

Campus safety standards require at least TWO (2) coats of Sealer be applied to a cleaned floor, **and** at least THREE (3) coats of Finish must be applied on top of the sealer.

- c. Floor Cleaning Procedures:
 1. Sweep floor clean of debris
 2. Cord off area if necessary
 3. Put up Caution signs
 4. Mix Stripper or Cleaning solution according to label
 5. Apply solution to floor
 6. Start setting up equipment
 7. Place RED abrasive pad on buffer (buffer less than 300 rpms)
 8. Begin stripping or cleaning floor working with buffer moving it side to side across the floor.
 9. Use HEPA filtered water vacuum to begin to suck up slurry*
*use of HEPA filtered water vacuum is required on existing floor tile which contains asbestos.
 10. Apply additional coats of water and re-vacuum up floor
 11. Mop floor with clean water, change rinse water often
 12. Mop floor a second time
 13. Mop floor to dry completely
 14. Clean up equipment
 15. Wash red pad with clean water.
- d. Sealing Procedures:
 1. Using a new mop head or clean wax mop and clean bucket, apply first coat of approved sealer to floor
 2. Allow floor to dry completely (at least 20 minutes)
 3. Apply second coat of sealer
 4. Allow floor to dry
- e. Finishing (Waxing) Procedures:
 1. Using a clean wax mop and bucket apply first coat of approved finish (wax)
 2. Allow floor to dry completely (at least 20 minutes)
 3. Apply second coat of finish (wax)
 4. Allow floor to dry completely (at least 20 minutes)
 5. Apply third coat of finish (wax)
 6. Allow floor to dry completely (at least 30 minutes)
 7. Wash mop and bucket with clean water
 8. If floor is dry - remove caution signs and open area up

- f. Burnishing Procedures:
The next working day
 1. Sweep floor clean of debris
 2. Spot mop floor to remove spots and dirt
 3. Set up High Speed Burnisher to make for a safe environment
 4. Start Burnishing. Walk forward in a straight line
 5. At end of row, turn around and start forward again
 6. Repeat steps 5 & 6 until finished
 7. Clean up equipment and pad.

- E. Completion: The entire work inside and out, and the entire premises shall be in first-class, clean condition upon completion before being accepted by the Owner.

END OF SECTION

PART 1 - GENERAL

1.01 SUMMARY

- A. This section describes the definitions, recording and maintenance requirements and the submittal requirements for record documents.

1.02 DEFINITIONS

- A. The Project Record Documents are intended to indicate all changes and deviations from the original contract documents and permanently record the "as-built" condition of material, equipment and structure. The project record documents shall include the contract drawings, project manual, addenda, change orders, modifications and clarifications, field directives, approved shop drawings, approved product data, manufacturer's certificates and project test results.

1.03 SUBMITTALS

- A. Submit the project record documents in conformance with Section 01700 and prior to the final applications for payment. The final application for payment will not be approved prior to the submittal of record documents.

1.04 QUALITY ASSURANCE

- A. The project record documents shall be updated at a minimum on a weekly basis and shall be readily available for inspection by the owner and consultants. Maintain a separate set of complete documents for exclusive use of record documents and protect the documents from damage in a clean, dry location. Note: Progress applications for payment will not be approved if record documents are not current.
- B. The record documents shall contain a clear, legible record of all detail and dimensional changes and locate all concealed work including, but not limited to:
 - 1. Interior and Exterior Utilities
 - 2. Valves
 - 3. Dampers
 - 4. Controls
 - 5. Junction Boxes
 - 6. Clean-outs
 - 7. Access Doors
- C. The project manual (specifications) shall indicate all manufacturers' products complete with catalogue number and trade name of products installed. All changes and corrections to the project manual shall be clearly indicated.

END OF SECTION

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Compile product data and related information appropriate for the University of Colorado's maintenance and operation of products furnished.
- B. Prepare operating and maintenance data as specified in this section and as referenced in other pertinent sections of specifications.
- C. Instruct the University of Colorado, Facilities Management personnel in the maintenance of PRODUCTS and in the operation of equipment and systems.

1.02 QUALITY ASSURANCE

- A. Preparation of data shall be done by personnel:
 - 1. Trained and experienced in maintenance and operation of the described products.
 - 2. Completely familiar with requirements of this section.
 - 3. Skilled as a technical writer to the extent required to communicate essential data.
 - 4. Skilled as a draftsman competent to prepare required drawings.

1.03 SUBMITTALS

- A. Prepare data in the form of an instructional manual for use by the University of Colorado, Facilities Management personnel. Quantities are listed in Part 1.07.
- B. Format:
 - 1. Submit electronically in **Portable Document Format** (PDF) format as one document, OCR (Optical Character Recognition) searchable, bookmarked according to the Construction Specifications Institute (CSI) standards.
 - 2. Title shall be "OPERATING AND MAINTENANCE INSTRUCTIONS", and shall include:
 - a. Name of project and date of completion (month and year).
 - b. Project number.
 - c. Identify of general subject matter covered in the manual (e.g., Architectural, Mechanical, Electrical and/or Civil).

1.04 CONTENT OF MANUAL

- A. An electronically-written table of contents shall be provided for each volume, arranged according to CSI standards.
Include the following:
 - 1. Name of responsible installing principal contractor, address, and telephone number.
 - 2. A list of each product being included, indexed to the content of the volume.
 - 3. List with each product, the name, address, and telephone number of:
 - a. Maintenance contractor, as appropriate.
 - b. Identity of the area of responsibility of each.
 - 4. Identify each product by product name and other identifying symbols.

- B. Product Data:
 - 1. Local source of supply for parts and replacement.
 - 2. Include only those sheets that are pertinent to the specific product, with the following information.
 - a. Clearly identify the specific product or part installed.
 - b. Clearly identify the data applicable to the installation.
 - c. Delete references to inapplicable information.
- C. Drawings:
 - 1. Supplement product data with drawings as necessary to clearly illustrate:
 - a. Relations of component parts of equipment and systems.
 - b. Control and flow diagrams.
 - 2. Coordinate drawings with information in project record drawings to ensure correct illustration of completed installation.
 - 3. Do not use project record drawings as maintenance drawings.
- D. Provide written text, as required, to supplement product data for the particular installation:
 - 1. Organize in a consistent format under separate headings for different procedures.
 - 2. Provide a logical sequence of instructions for each procedure.
- E. Provide a copy of each warranty, bond, and service contract issued. Provide information sheets for the University of Colorado, Facilities Management's personnel and give:
 - 1. Proper procedures in the event of failure.
 - 2. Instances that might affect the validity of warranties or bonds.

1.05 MANUALS FOR ARCHITECTURAL MATERIAL AND FINISHES

- A. Submit copies (per schedule shown in paragraph 1.07) of complete manual in final form.
- B. Content for architectural products include applied materials and finishes.
 - 1. Manufacturer's data, giving full information on products.
 - a. Catalog number, size, and composition.
 - b. Color and texture designations.
 - c. Information required for reordering special manufactured products.
 - 2. Instructions for care and maintenance:
 - a. Manufacturer's recommendation for types of cleaning agents and methods.
 - b. Cautions against cleaning agents and methods that are detrimental to the product.
 - c. Recommended schedule for cleaning and maintenance.
- C. Content for moisture-protection and weather-exposed products:
 - 1. Provide manufacturer's data, giving fully information on products.
 - a. Applicable standards
 - b. Chemical composition
 - c. Details of installation
 - 2. Provide instructions for inspection, maintenance, and repair.

1.06 MANUAL FOR NON-ARCHITECTURAL EQUIPMENT AND SYSTEMS

- A. Submit copies (per schedule) of complete manual in final form.
- B. Content for each unit of equipment and system, as appropriate shall contain:
 - 1. Description of unit and component parts (Consultant-approved submittals).
 - a. Function, normal operating characteristics, and limiting conditions.
 - b. Performance curves, engineering data, and tests.
 - c. Complete nomenclature and Commercial number of all replaceable parts.
 - 2. Operating Procedures:
 - a. Start-up, break-in, routine, and normal operating instructions.
 - b. Regulation, control, stopping, shutdown, and emergency instructions.
 - c. Summer and winter operating instructions.
 - d. Special operating instructions.
 - 3. Maintenance Procedures:
 - a. Routine operations.
 - b. Guide to troubleshooting.
 - c. Disassembly, repair, and reassembly.
 - d. Alignment, adjustment, and checking.
 - 4. Servicing and Lubrication Schedule, including a list of lubricants required.
 - 5. Manufacturer's operating and maintenance instructions.
 - 6. Description of sequence of operation by control manufacturer.
 - 7. Original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance and replacement.
 - a. Predicted life of parts subject to wear.
 - b. Items recommended to be stocked as spare parts.
 - 8. List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.
- C. Content for each electric and electronic system, as appropriate, shall contain:
 - 1. Description of system and component parts:
 - a. Function, normal operating characteristics, and limiting conditions.
 - b. Performance curves, engineering data, and tests.
 - c. Complete nomenclature and Commercial number of replaceable parts.
 - 2. Operating Procedures:
 - a. Routing and normal operating instructions.
 - b. Sequences required.
 - c. Special operating instructions.
 - 3. Maintenance Procedures:
 - a. Routing operations.
 - b. Guide to troubleshooting.
 - c. Disassembly, repair, and reassembly.
 - d. Adjustment and checking.
 - e. Manufacturer's printed operating and maintenance instructions.
 - f. List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.
- D. Prepare and include additional data when the need for such data becomes apparent during instruction of the University of Colorado, Facilities Management's personnel.

1.07 OPERATION & MAINTENANCE MANUAL

- A. Operations and Maintenance Manuals – all disciplines – submit electronically in **Portable Document Format** (PDF) format as one document, OCR (Optical Character Recognition) searchable, bookmarked according to the Construction Specifications Institute (CSI) standards.

1.08 SUBMITTAL SCHEDULE

- A. Submit one electronic copy to the Consultants and one to the University of draft of proposed formats and outlines of contents upon completion of the submittal process. The Consultants and the University staff will review the draft and will submit comments through the consultants.
- B. Submit electronic copies of complete manual(s) in final form 15 days prior to final inspection or acceptance. Comments will be submitted after final inspection.
- C. Submit specified number of CDs or DVDs of approved data in final form prior to acceptance.

1.09 INSTRUCTION OF UNIVERSITY OF COLORADO, FACILITIES MANAGEMENT PERSONNEL

- A. Fully instruct the University of Colorado, Facilities Management personnel's designated operating and maintenance personnel in the operation, adjustment, and maintenance of all products, equipment, and systems as required elsewhere in the specification.
- B. Operating and Maintenance manual may be required as the basis of instruction.

PART 2 - MATERIAL

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

SECTION 02070 - SELECTIVE DEMOLITION

PART 1 GENERAL

1.00 RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1-Specification sections, apply to work of this Section.

1.01 DESCRIPTION OF WORK

A. GENERAL:

The Work to be completed under this Contract shall be as shown, documented and set forth in the Contract Documents.

The scope of demolition is defined in the Specifications and indicated on the Drawings. Drawings reflect approximate extent of existing construction. Contractor is responsible for touring all levels of the existing space to determine existing conditions.

This Contractor shall have the overall responsibilities for all of the Work specified herein. All Work normally defined as "Architectural Finish" and as listed as "Base Space Demolition" shall be completed by this Demolition Contractor. All Work normally defined as "Mechanical Systems" and as listed "Mechanical Space Demolition" shall be completed by a Mechanical Contractor under contract with this Contractor. All Work normally defined as "Electrical System" and as listed "Electrical Space Demolition", shall be completed by an Electrical Contractor under contract with this Contractor.

Demolition includes, but is not necessarily limited to, the following:

B. BASE SPACE DEMOLITION:

Refer to Drawings for areas and materials to be removed.

C. MECHANICAL SPACE DEMOLITION:

Refer to Drawings and other Specification Sections for additional requirements.

D. ELECTRICAL SPACE DEMOLITION:

Refer to Drawings and other requirements in this Section for special conditions.

E. CODES:

Conform to codes and requirements of governing authority. Obtain and pay for all permits for demolition; protection of the public and property; transportation and disposal of debris; and capping of utility services.

F. Related Work Specified Elsewhere:

Section 01121 – Hazardous Materials Procedures
Section 02080 – Asbestos Removal

1.02 SUBMITTALS

- A. SUBMITTAL PROCEDURES: Refer to Section 01300.
- B. SCHEDULE:
Submit proposed methods and operations of building demolition to Architect for review prior to start of work. Include in schedule coordination for shut-off, capping and continuation of utility services:
 - 1. Permits and notices authorizing demolition.
 - 2. Certificates of severance of utility services.
 - 3. Permit for transport and disposal of debris.
 - 4. Provide a detailed sequence of demolition and removal work to ensure uninterrupted progress of Owner's operations.

1.03 JOB CONDITIONS

The demolition subcontractor and the General Contractor's representative will walk through the premises with Architect for verification of work prior to commencement.

Architect to determine which materials are to be salvaged for reuse.

- A. OCCUPANCY:
 - 1. The owner is and will continue to occupy the floors adjacent to the work space.
 - 2. Conduct selective demolition work in manner that will minimize the need for disruption of normal of normal operations.
 - 3. Provide minimum of 72 hours advance notice of demolition activities and utility outages.
- B. CONDITION OF EXISTING MATERIALS:
 - 1. The Owner assumes no responsibility for actual condition of structures to be demolished.
 - 2. Do not scale drawings, the Contractor is to verify all conditions (i.e., existing corridor locations and dimensions, existing door types and locations, lighting, floor and wall finish locations, etc.) in the field.
 - 3. A copy of the environmental site assessment will be available for inspections at the CU project manager's office.
- C. PROTECTIONS:
Ensure safe passage of persons around area of demolition. Conduct operations to prevent injury to adjacent occupied space, other facilities and persons. Contractor shall comply fully with OSHA requirements.
- D. DAMAGES:
Promptly repair damages caused to adjacent facilities by demolition operations at no cost to Owner.
- E. UTILITY SERVICES:
 - 1. Outage in service require that a 10 day notice be given to the CU Project Manger to coordinate with other building users.
 - 2. Maintain existing utilities indicated to remain, keep in service and protect against damage during demolition operations, Do not interrupt existing utilities serving occupied or used

facilities, except when authorized in writing by the Architect.

- E. EXPLOSIVES:
Use of explosives will not be permitted.
- F. ENVIRONMENTAL CONTROLS
 - 1. Use water sprinkling, temporary enclosures, and other suitable methods to limit dust and dirt rising and scattering in air to lowest practical level. Comply with the Department of Environmental Health and Safety requirements pertaining to environmental protection. Comply with Colorado Department of Health requirements regarding debris control.
 - 2. Keep dust and dirt from migrating to occupied building areas.

PART 2 - PRODUCTS

2.01 MATERIALS SALVAGE

- A. The Owner reserves first salvage rights including:
 - 1. Items of historic or archaeological significance or value.
 - 2. Construction material and products.
 - 3. Mechanical, electrical equipment and components.
- B. The Contractor shall notify the Owner for review of material to be stored or selected for salvage.
- C. Coordinate with the Department of Facilities Management.
 - 1. Items indicated to be removed but of salvageable value to Contractor may be removed in a timely manner from structure as work progresses, if such items are not claimed by the Owner. the waste reduction progress reports.
- D. Transport salvaged items from site as they are removed.
- E. Storage or sale of removed items on site will not be permitted.

2.02 DUSTPROOF BARRIER

- A. Erect an approved barrier separating the work space from Owner occupied spaces beyond the Phasing Boundary before starting any demolition or construction. Seal in seams and connections to existing construction, walls, ceilings and areas where the Owner's personnel and equipment will be in operation during construction. The dust proof integrity of the barrier shall be maintained throughout the work.

PART 3 - EXECUTION

3.01 DEMOLITION

- A. GENERAL DEMOLITION REQUIREMENTS:
 - 1. All items that are to be reused, shall be stored in a protected area approved by the owner. The intent is to reinstall all reusable items removed.

2. The General Contractor shall remove all wall conduits left after all demolition, including switch boxes, plates, bridges or any other telephone/electrical wiring or equipment or as otherwise directed by Architect or the Electrical Contractor.
3. In all areas where demolition (removal of tile, carpeting, partitions, etc. causes unevenness in the slab, the Contractor shall patch and/or flash patch to level the slab to receive new finished floor.
4. The General Contractor shall at all times protect the property of the Building Owner, including but not limited to windows, floor and ceiling tile, public toilets, elevators, doors, bucks, electrical air conditioning equipment, peripheral enclosures, etc.

B. POLLUTION CONTROLS:

1. Use temporary enclosures and other suitable methods to limit dust and dirt rising and scattering in air to lowest practical level. Comply with governing regulations pertaining to environmental protection.
2. Clean adjacent space(s) and improvements of dust, dirt and debris caused by demolition operations, as directed by Architect. Return adjacent areas to condition existing prior to the start of work.

C. SPACE DEMOLITION:

1. Demolish materials completely and remove from site. Use such methods as required to complete work within limitations of governing regulations.

3.02 DISPOSAL OF DEMOLISHED MATERIALS

A. GENERAL:

1. Remove debris, rubbish and other materials resulting from demolition operations from building site and off the campus.
2. Under no circumstances should the University's dumpsters be used for disposal of demolished.

B. REMOVAL:

1. Transport and dispose of non-recyclable or non-salvageable materials off site in legal manner.
2. Burning of removed materials is not permitted on project site.

C. TIME OF DEMOLITION WORK:

General Demolition Work in the construction area shall be accomplished during normal working hours unless otherwise indicated.

All labor and cartage costs shall be included in Bid(s).

3.03 CLEAN UP

- A. Repair all areas of demolition performed in excess of that required, at no cost to the Owner.

- B. an adjacent structures and improvements of dust, dirt, and debris caused by demolition operations, as directed by Architect or governing authority. Return adjacent areas to condition existing prior to the start of work.
- C. n completion of the demolition work, the General Contractor shall provide that all areas be left broom clean.

END OF SECTION 02070

SECTION 05500 - METAL FABRICATIONS

PART 1 - GENERAL

1.00 RELATED DOCUMENTS:

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division I-Specification sections, apply to work of this section.

1.01 DESCRIPTION:

A. WORK INCLUDED:

1. Provide miscellaneous metal fabrications manufactured or fabricated to special, conventional, or standard details, as shown on the Drawings and specified herein. Work includes, but is not necessarily limited to:
 - a. Anchor plates, weld plates, and other embedments.
 - b. Overhead supports and bracing for toilet partitions, operable walls, and other suspended work.
 - c. Equipment supports.
 - d. Steel lintels at masonry openings.
 - e. Other miscellaneous; non-structural framing as shown on the Drawings or required for the bracing or support of the work of other Sections.
 - f. Anchors, fasteners, and related hardware or accessories required for the installation of work specified herein.
2. Carefully examine the Drawings and other Sections of these Specifications for metal fabrications and miscellaneous non-structural framing or support items which may not be specifically shown or specified herein. Avoid duplications and assume responsibility for providing all necessary items required for the completion of the Work.

B. Related Work Specified Elsewhere:

1. Drilled-In Insert Testing: Section 01400 Quality Control
2. Field painting of metal fabrications is specified in Section 09900.

C. Definitions:

1. Metal Fabrications: Synonymous with miscellaneous metals.
2. Architecturally Exposed Structural Steel: As used under this section, includes all metal fabrications exposed to view.

1.02 QUALITY ASSURANCE:

- A. Fabricator Qualifications: Experienced in fabrication of miscellaneous steel.
- B. Welder Qualifications: Welding shall be done only by certified welding operators currently qualified according to AWS D1.1.
- C. Reference Standards:

1. Steel: Meet requirements of AISC "Specifications for Architecturally Exposed Structural Steel," latest edition.
2. Welding: Meet requirements of AWS "Structural Welding Code," D1.1, latest edition.

D. **STRUCTURAL CRITERIA:**

- I. Handrails and Guardrails: Rails must be capable of resisting a uniform lateral load of 50 plf applied horizontally to the top rail, plus a concentrated load of 200 lbs applied at any point in any direction.

1.03 REFERENCES:

- A. **REFERENCE STANDARDS:** Comply with the requirements of the reference standards noted herein, except where more stringent requirements are listed herein or otherwise required by the Contract Documents. A complete listing of applicable reference standards, including full name of publishing agency and date or edition number is contained in Section 01455.

1.04 SUBMITTALS:

- A. **Shop Drawings:** Submit shop drawings as specified under Section 01300 for all custom fabricated items under this section. Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners and accessories. Include erection drawings, elevations and details where applicable. Indicate welded connections using standard AWS welding symbols. Indicate net weld lengths and sizes.
- B. **Product Data:** Submit product data as specified under Section 01300 for all manufacturers' stock items under this section.

1.05 DELIVERY, STORAGE AND HANDLING:

- A. Deliver anchor bolts and other anchorage devices which are embedded in cast-in-place concrete or masonry construction to the project site in time to be installed before the start of cast-in-place concrete operations or masonry work. Provide setting drawings, templates, and directions for the installation of anchor bolts and other similar devices.
- B. Metals which are stored at the project site shall be above ground on platforms, skids, or other supports. Protect steel from corrosion. Store other materials in a weather tight and dry place until ready for use.
- C. Store packaged materials in their original, unbroken package or container.

1.06 JOB CONDITIONS:

Protection: Protect any adjacent materials or areas below from damage due to weld splatter or sparks during field welding.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. STEEL PLATES AND SHAPES: ASTM A36.
- B. STEEL PLATES FOR COLD-FORMING: ASTM A283, Grade C.
- C. STEEL TUBING: ASTM A501.
- D. STEEL BARS: ASTM A663 or ASTM A36.
- E. STEEL SHEETS: ASTM A366
- F. STAINLESS STEEL TUBING: ASTM A554, Type 304, Grade MT304.
- G. WELDING MATERIALS: Conform to AWS Code and AWS filler metal specifications.
- H. FASTENERS:
 - 1. Use same material and finish as parts being joined, except use stainless steel between dissimilar metals and non-corrosive fasteners at exterior connections or joints.
 - 2. Provide fasteners of sufficient strength to support connected members and loads, and to develop full strength of parts fastened or connected.
- I. PRIMER: Provide the following primer types
 - 1. Metal Fabrications Receiving High Performance Finish Coatings: Zinc-rich, organic, rust-inhibitive primer with metallic zinc content not less than 75% of the total non-volatile content. Acceptable products include:
 - a. ICI/Devoe #310 "Catha-Coat"
 - b. Tnemec 90-97 "Tneme-Zinc"
 - c. Approved substitution.
- J. GALVANIZING REPAIR COMPOUND: ZRC Products Co. "Z.R.C. Cold Galvanizing Compound", or approved substitute, liquid organic zinc compound containing not less than 95% pure zinc metal.

2.02 MANUFACTURED PRODUCTS:

- A. FORMED STEEL CHANNEL SUPPORT FRAMING SYSTEM:
 - 1. "Unistrut" or similar manufactured system consisting of roll-formed steel channels fabricated from structural grade steel complying with ASTM A570, Grade 33 or ASTM A446, Grade A, weighing 190 lbs per 100 lineal feet. Provide channels with hot-dip galvanized finish complying with ASTM A123 or ASTM A153.
 - 2. Unless otherwise indicated, provide channels with dimensions of 1-518" x 1-5/8", with 718" clear opening between lip returns.
 - 3. Provide all required fittings, anchors, and accessories or incidental materials.
- B. GRATINGS: McNichols Co. Type GW welded steel bar grates, consisting of continuous steel bearing bars spaced approximately 1-3/16" O.C. and cross bars spaced 4" o.c., with standard saddle clip fasteners. Unless otherwise noted, provide 1" x 3/16" bearing bars of the following types and finishes:
 - 1. Exterior Gratings: Serrated bars, galvanized finish
 - 2. Interior Gratings: Plain bars, shop prime coat finish

2.03 FABRICATION:

- A. WORKMANSHIP:
1. Fabricate work to sizes, shapes, and profiles shown, and in accordance with approved shop drawings. Verify all dimensions prior to fabrication.
 2. Fabricate equipment supports and other items penetrating through roof from square, rectangular, or round tubing; angle, channel, or H-shapes will not be permitted.
 3. Do all punching, shearing, cutting, and forming so as to produce clean, true lines, and surfaces with a constant width on each face. Form straight and true edge arises and uniform contours as detailed. Make stampings and perforations with uniformly spaced and sized openings in alignment in both directions. Dress all cuts smooth; make corners square and joints tight. Ease sharp edges.
 4. Uniformly space and align members. Provide sleeves, inserts, anchors, and other built-in and auxiliary work. Provide welded connections at all joints and intersections; use continuous welds and grind smooth.
 5. Cut, drill, and tap units to receive hardware. Provide all necessary brackets, anchors, fasteners, and other accessory items required for complete installation.
- B. EXPOSED-TO-PUBLIC-VIEW MEMBERS: Comply with the fabrication requirements for Architecturally Exposed Structural Steel as specified in Section 05120.
- C. GALVANIZING: Where miscellaneous steel fabrications are indicated to be galvanized or zinc-coated, apply coating by hot-dip process after items are assembled or fabricated in accordance with ASTM A386.
- D. SHOP CLEANING:
1. Metal Fabrications Receiving High-Performance Finish Coatings: Completely remove oil, grease, dirt, mill scale, rust, corrosion products, oxides, paint, or other foreign matter from surface of steel in accordance with SSPC-SP6, "Commercial Blast Cleaning".
 2. Other Metal Fabrications: Remove rust, loose mill scale, oil, and foreign material. Clean surfaces just prior to shop painting by use of power tools and solvents in accordance with SSPC-SP3, "Power Tool Cleaning".
- E. SHOP PAINTING: Immediately after cleaning, spray apply primer to a minimum dry film thickness as recommended by paint manufacturer, but not less than 2.0 mils per coat.

2.04 DESCRIPTION OF FABRICATED ITEMS:

- A. EQUIPMENT SUPPORTS:
1. Provide welded steel supports in accordance with Detailed Drawings. Verify dimensions and sizes with manufacturer of equipment to be supported.
 2. Fabricate from angles, tubes, or shapes as indicated. Punch or drill for bolts or other attachment, and provide all required internal bracing to prevent deflection or racking under load.
 3. Provide minimum 12 gauge steel flashing collars at all members penetrating roof; furnish collars loose for field welding after erection.
- B. STEEL LINTELS: Provide steel angle lintels for masonry openings. Unless otherwise shown on the Drawings, size lintels in accordance with the following table:

<u>Opening Width</u>	<u>Lintel Size</u>	<u>Min. End Bearing</u>
3-6" or less	3-1/2 x 3-1/2 x 1/4	4" each end
3-7 to 3-6"	4 x 3-1/2 x 1/4	6" each end
5-7" to 7-6"	5 x 3-1/2 x 3/8	6" each end

- C. EMBEDMENTS: Provide miscellaneous weld plates and anchor plates as indicated or required for embedding in concrete or building into masonry for attachment of the work of other trades.

PART 3 - EXECUTION

3.01 EXAMINATION:

- A. VERIFICATION OF CONDITIONS: Examine areas and conditions under which the work of this Section will be performed. Do not proceed with the work until unsatisfactory conditions have been corrected. Commencement of work implies acceptance of all areas and conditions.

3.02 INSTALLATION:

A. GENERAL:

1. Install metal fabrications in accordance with approved shop drawings.
2. Set work accurately into position, plumb, level, true, and free from racking. Bring each member into alignment with mating members and set in correct relationship to adjacent work with tight joints.
3. Provide fasteners of proper size and type and in sufficient quantity to develop full strength of parts being joined and to safely support and transfer all loads. Provide all necessary concealed clips and fasteners to hold work securely and rigidly.
4. Remove all temporary braces or erection clips when no longer needed and restore affected surface finishes.
5. Insulate between dissimilar metals at connections.
6. Install flashing collars at members penetrating roofing. Coordinate installation with roofing trades.

- B. EXPOSED-TO-PUBLIC-VIEW MEMBERS: Comply with the installation or erection requirements for Architecturally Exposed Structural Steel as specified in Section 05120.

3.03 FIELD QUALITY CONTROL:

- A. VISUAL INSPECTION: The testing and inspection agency will visually inspect shop and field welding and bolting of handrails, ladders, and other items requiring structural connections. Welds or bolts which do not pass visual inspection will be tested as specified in Section 01455 at the Contractor's expense.

3.04 CLEANING AND PROTECTION:

A. TOUCH-UP AND REPAIR OF GALVANIZED COATING:

1. Welds: Wire brush to remove slag residue, weld splatter, and similar deleterious materials. If surface is oily, clean with phosphoric acid base compound as recommended by

galvanizing repair compound manufacturer. Apply galvanizing repair compound in accordance with manufacturer's instructions.

2. Scratches and Other Surface Damage: Thoroughly wash damaged area with water or mild detergent to remove any zinc oxides that may have formed. Apply galvanizing repair compound in accordance with manufacturer's instructions.

- B. PROTECTION OF WORK IN PLACE: Protect all work in piece, and replace damaged finished work without cost to Owner.

END OF SECTION 05500

SECTION 09900 – PAINTING

PART 1 - GENERAL

1.00 RELATED DOCUMENTS:

Drawings and general provisions of the contract, including General and Supplementary Conditions and Division 1-Specification sections, apply to the work of this section.

1.01 DESCRIPTION OF WORK:

A. WORK INCLUDED:

1. Paint and finish all interior and exterior surfaces as shown on the Drawings or listed in the Painting Schedule contained herein, or as required to complete the Work. Unless specifically designated to be unfinished or unpainted, paint all surfaces exposed to view.
2. Where an item or surface is not specifically mentioned, paint the same as similar adjacent materials or surfaces. If color or finish is not designated, the Architect will select from standard colors or finishes available.
3. Unless otherwise indicated, paint all rooftop equipment, ductwork, piping, conduit, vents, weather caps, galvanized steel flashings, and other exposed appurtenances.
4. Unless otherwise indicated, paint all exposed interior and exterior structural steel; steel stairs and stair components, including stringers and pans; ladders, handrails, guardrails, and miscellaneous steel fabrications; panelboards, switchgear, transformers, conduit, piping, access doors, and ductwork.
5. Work includes field-painting exposed bare and covered pipes and ducts (including color coding), hangers, exposed steel and iron work, and primed metal surfaces of mechanical and electrical equipment.

B. RELATED WORK:

1. Priming or priming and finishing of certain surfaces may be specified to be factory applied or shop applied by fabricators. Carefully examine other Sections of these Specifications for priming or finishing work installed by other trades in order to avoid duplications or omissions; assume responsibility for painting or finishing of all Work as scheduled or specified herein.
2. Clear dustproofing sealers applied to concrete floors are specified in Section 03300.

C. WORK NOT INCLUDED:

1. Unless otherwise indicated, do not paint surfaces in concealed or inaccessible areas such as furred spaces, foundation spaces, pipe or duct chases, shafts, or utility tunnels.
2. Do not paint metal surfaces of anodized or prefinished aluminum, stainless steel, copper, bronze, brass, and chromium plate.
3. Do not paint moving parts of operating equipment, mechanical or electrical moving parts, linkages, sensing devices, and motor shafts.
4. Do not paint over Underwriters' Laboratories (UL), Factory Mutual (FM), or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.

5. Unless otherwise indicated, do not paint acoustical ceilings or other exposed acoustical materials.
6. Removal of lead-based paint in existing structures is not in this Contract.

D. RELATED DOCUMENTS:

1. Drawings, General and Supplementary Conditions, and applicable provisions of Division 1 Sections apply to this Section.
2. Refer to Room Finish Schedule for paint types and locations.

1.02 REFERENCES

- A. REFERENCE STANDARDS: Comply with the requirements of the reference standards noted herein, except where more stringent requirements are described herein or otherwise required by the Contract Documents. A complete listing of applicable reference standards, including full name of publishing agency and date or edition number, is contained in Section 01425.

1.03 DEFINITIONS:

- A. REFERENCE: Unless otherwise specified herein, the terms used in this Section shall be as defined in ANSIIASTM D 1 6, Definitions of Terms Relating to Paint, Varnish, *Lacquer*, and Related Products.
- B. PAINT: The term "paint", as used herein, means coatings systems materials including primers, sealers, fillers, emulsions, enamels, epoxy, stains, lacquers, varnishes, and other applied materials, whether used in prime coats, intermediate coats, or finish .coats.
- C. SYSTEM: The term "system", as used herein, implies that each finish is comprised of materials and quantities recommended by the approved manufacturer for the specified surfaces, and includes preparation, priming or sealing, intermediate coats, and finish coats as applicable.
- D. FIRST LINE: The term "first line", as used herein, means the best quality trade sales product produced by the manufacturer for the specified use or application.
- E. EXPOSED SURFACES: The term "exposed surfaces", as used herein, means all interior and exterior surfaces which will not be covered by other finishes or finish materials when the construction is complete, except for those surfaces specifically excluded under "WORK NOT INCLUDED" above.
- F. CONCEALED SURFACES: The term "concealed surfaces", as used herein, means surfaces which will be covered by other finishes or finish materials in a manner that the surface will not be exposed to view when the construction is completed.
- G. GLOSS LEVELS: Paint gloss levels specified herein are based on the following ranges:

Description	Gloss Range	ASTM D523 Test Method
Flat	0-15	85 deg meter
Eggshell	5-20	60 deg meter
Satin	15-35	60 deg meter
Semi-Gloss	30-65	60 deg meter
Gloss Over	65	60 deg meter

1.04 SUBMITTALS:

- A. SUBMITTAL PROCEDURES: Refer to Section 01300.
- B. MATERIALS LIST: Submit a complete list of all materials to be furnished under this Section.
- C. PRODUCT DATA: Submit manufacturer's published material specifications for each paint system specified, including block fillers and primers. Include composition of materials, handling and storage instructions, preparation of substrates, application procedures, recommended mil thickness of finished coats, and standard color charts.
- D. CERTIFICATIONS: Submit certification by the manufacturer that products proposed for use in the Work comply with local regulations controlling use of volatile organic compounds (VOCs).
- E. SAMPLES: When requested by the Architect, submit 12" x 12" samples of finish materials applied to actual substrate materials, including sealers, fillers, primers, and specified number of finish coats. Do not commence finish painting until all samples and colors have been approved by the Architect.

1.06 QUALITY ASSURANCE:

- A. QUALIFICATIONS: Provide adequate numbers of skilled workmen who are thoroughly trained and experienced in the preparation and application of the specified materials.
- B. COMPATIBILITY OF MATERIALS:
 - 1. Provide finish coats which are compatible with substrate materials or with prime coats specified in other Sections.
 - 2. Notify the Architect of any anticipated problems in applying finish coats over substrates or prime coats applied under other Sections; provide barrier coats or remove non-compatible primers at no additional cost to the Owner.
- C. VOC COMPLIANCE:
 - 1. Paints, sealers, and other architectural coatings manufactured on or after September 13, 1999, shall comply with the applicable requirements of the U.S. Environmental Protection Agency "National Volatile Organic Compound Emission Standards for Architectural Coatings," (Title 40 CFR Part 59, Subpart D), unless local or state VOC regulations are more stringent.
 - 2. Labelling shall include the date of manufacture and VOC content.
- D. MOCK-UPS:

1. On wall surfaces and other exterior and interior components, duplicate finishes of prepared samples. Provide full-coat finish samples on at least 100 sf of surface until required sheen, color, and texture are obtained; simulate finished lighting conditions for review of in-place work.
2. Final acceptance of colors will be from mock-ups.

1.07 DELIVERY, STORAGE and HANDLING:

A. PACKING AND SHIPPING:

1. Deliver materials in manufacturer's original containers, unopened except as required for premixing of colors, and with labels intact and legible.
2. Clearly label each material with the following information:
 - a. Paint type and color name or number, keyed to Architect's color schedule.
 - b. Product name or title of material.
 - c. Product description (generic classification or binder type).
 - d. Manufacturer's stock number and date of manufacture.
 - e. Contents by volume, for pigment and vehicle constituents.
 - f. Thinning instructions.
 - g. Application instructions.

B. STORAGE AND PROTECTION:

1. Store materials in well-ventilated, protected areas; protect from freezing.
2. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45°F. Maintain containers used in storage in a clean condition, free of foreign materials and residue.

1.08 PROJECT CONDITIONS:

A. ENVIRONMENTAL REQUIREMENTS:

1. Unless otherwise permitted by manufacturer's printed instructions and approved by the Architect, do not apply paint when any of the following environmental conditions exist:
 - a. Do not apply solvent-based paints when temperature of surfaces to be painted or surrounding air is less than 45°F or more than 95°F.
 - b. Do not apply water-based paints when temperature of surfaces to be painted or surrounding air is less than 50°F or more than 90°F.
 - c. Do not apply any type paint during rain, mist, fog, or snow; or when relative humidity exceeds 85%; or at temperatures less than 5°F above the dew point.
2. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by the manufacturer during application and drying periods.

B. SURFACE CONDITIONS: Do not apply paint to damp or wet surfaces, or to surfaces on which dust, dirt, rust, oil, grease or other detrimental substances are present.

C. VENTILATION: Provide the maximum ventilation possible to the exterior in areas where paint application is in progress.

1.08 **MAINTENANCE:**

- A. EXTRA MATERIALS: In accordance with the applicable provisions of Section 01780, furnish to the Owner an extra stock equaling not less than 10% or one gallon, whichever is more, of each color, type, and gloss of paint used in the Work. Furnish in manufacturer's original containers, tightly sealed, and clearly labeled with contents, color, and location used in the Work.

PART 2 - PRODUCTS

2.01 **MANUFACTURERS:**

- A. APPROVED MANUFACTURERS:
 - 1. Paint Products: Benjamin Moore, Carboline, Diamond Vogel, ICI, Kelly-Moore, Kwal-Howells, Pittsburgh Paint, Porter Paints, Sherwin-Williams, Tnemec, or Wellborn paint companies.
 - 2. Provide field-applied primers or undercoats produced by the same manufacturer as the finish coat or coats.

2.02 **MATERIALS:**

- A. GENERAL MATERIALS REQUIREMENTS:
 - 1 Unless otherwise specified, provide manufacturer's first line, commercial products.
 - 2. Product types specified herein notwithstanding, provide only materials which comply with local regulations controlling use of volatile organic compounds (VOCs). Notify the Architect prior to submission of bids if specified materials do not comply with local VOC regulations.
 - 3. Provide shellac, linseed oil, turpentine or other thinners and solvents of the highest quality and purity, each bearing manufacturer's identifying labels on the containers.
 - 4. Provide block fillers, primers, finish coat materials, and related materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by the manufacturer based on testing and field 'experience.
 - 5. Paint material containers not displaying manufacturer's product identification will not be acceptable.

- B. PRODUCT OPTIONS AND SUBSTITUTIONS: Refer to Section 01600. Where products are specified by generic type, materials produced by any of the above named manufacturers will be accepted. Where products are specified by proprietary name, only that product will be accepted.

- C. PRIMERS, SEALERS, AND FILLERS:
 - 1. General: The following requirements notwithstanding, provide primers, sealers, and fillers as recommended by paint system manufacturer for finish coats. Where manufacturer's recommendations differ from the products specified herein, notify the Architect in writing prior to application of primer, sealer or filler.
 - 2. Ferrous Metal Primer:
 - a. Latex Finish: Acrylic latex rust-inhibiting ferrous metal primer, minimum solids content 36%.
 - b. Urethane Finish: Modified epoxy or epoxy-polyamide primer, minimum solids content 56%.

- c. Industrial Alkyd Finish: Tnemec Series 37 Them-Prime HS'phenolic alkyd primer.
- 3. Galvanized Metal Primer:
 - a. Latex Finish: Acrylic latex rust-inhibiting galvanized metal primer, minimum solids content 36%.
 - b. Urethane Finish: Modified alkyd primer, minimum solids content 50%.
- 4. Wood Primer/Undercoat: Modified alkyd enamel undercoat, minimum solids content 41%.
- 5. Masonry Block Filler:
 - 1) Latex Finish: Heavy-bodied, highly-pigmented, 100% acrylic latex block filler, minimum solids content 38%.
 - 2) Epoxy Finish: Tnemec Series 130 "Envirofill" cementitious acrylic masonry filler.
- 6. Concrete: No primer required; specified finish is self-priming.
- 7. Gypsum Board Soffits: No primer required; specified finish is self-priming.
- 8. Gypsum Drywall: Polyvinyl acetate-acrylic resin (PVA) latex primer.

D. INTERIOR FINISH COATS:

- 1. Ferrous Metals:
 - a. Latex Finish: Polyvinyl acetate-acrylic resin enamel, semi-gloss finish, minimum solids content 35%.
 - b. Industrial Alkyd Finish: Tnemec Series 23 "Enduratone" industrial alkyd enamel.
- 2. Galvanized Metals: Polyvinyl acetate-acrylic resin enamel, semi-gloss finish, minimum solids content 35%.
- 3. Wood: Polyvinyl acetate-acrylic resin enamel, semi-gloss finish; minimum solids content 35%.
- 4. Drywall:
 - a. Eggshell Finish: Polyvinyl acetate-acrylic resin enamel, eggshell finish, minimum solids content 35%.
 - b. Epoxy Finish: Two-component waterborne epoxy polyamide, semi-gloss, minimum solids content 43%.
 - c. Flat Finish: Acrylic-vinyl resin latex flat wall paint, minimum solids content 34%.
- 5. Concrete:
 - a. Emulsified Acrylic Finish: Tnemec Series 6 Tneme-Cryl emulsified acrylic coating, low sheen finish. .
 - b. Epoxy Finish: Two-component waterborne epoxy polyamide, semi-gloss, minimum solids content 43%.

- F. OTHER MATERIALS: Provide all necessary putty, fillers, sealers, primers, undercoats, and finish materials not specifically described herein but required to complete the Work. Materials not specified herein must be approved by the Architect prior to application.

2.03 **COLOR SELECTIONS:**

- A. COLOR SCHEDULE: The Architect will select all paint colors and will prepare a color schedule for guidance in painting. Assume a maximum of six paint colors, including two accent colors, for bidding.

2.04 **EQUIPMENT:**

- A. APPLICATION EQUIPMENT: Provide and use only such equipment as recommended by paint manufacturer for application of the particular paint specified

PART 3 - EXECUTION

3.01 EXAMINATION:

- A. VERIFICATION OF CONDITIONS: Examine areas and conditions under which the work of this Section will be performed. Do not proceed with the work until unsatisfactory conditions have been corrected. Commencement of work implies acceptance of all areas and conditions.
- B. PRIMERS APPLIED UNDER OTHER SECTIONS:
 - 1. Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. Upon request, furnish information on characteristics of finish materials to fabricators or others applying prime coats ensure use of compatible primers.
 - 2. Notify the Architect about anticipated problems using the materials specified over substrates primed by others.

3.02 PREPARATION:

- A. PROTECTION OF ADJACENT WORK:
 - 1. Mask or otherwise protect adjacent surfaces from overlap, overspray, and paint spillage during paint application. Remove Hardware and other items which are removable and are in place and not scheduled or required to be painted.
 - 2. Reinstall and adjust removed items after completion of painting; use workmen skilled in the necessary trades. Remove and reinstall in a manner not to void warranties on the work in place.
- B. SUBSTRATE PREPARATION:
 - 1. General:
 - a. Clean each surface to be painted prior to applying prime or finish coats. Remove all traces of oil, grease, loose or peeling paint, or other foreign substances.
 - b. Provide barrier coats over incompatible primers or remove and reprime. Notify Architect in writing about anticipated problems using the specified finish coat material with substrates primed by others, at no additional cost to the Owner.
 - c. Schedule cleaning and painting so that dust or other contaminants from the cleaning process will not fall onto wet, newly painted surfaces.
 - 2. Wood Surfaces:
 - a. Sand lightly; use varying grades of sandpaper to produce uniformly smooth and unmarred wood surface. Prime or countersink and putty nailheads. Seal knots and sap streaks.
 - b. Do not proceed with priming and painting until moisture content of wood is 12% or less, as verified with approved moisture meter.
 - 3. Ferrous Metals - Shop Preparation:

- a. Substrate preparation, including cleaning and shop priming of structural, miscellaneous, and ornamental metals is specified in Division 5.
 - b. Verify compliance of shop preparation with finish coating manufacturer's requirements, and perform any additional or supplemental field preparation recommended by the finish coating manufacturer, at no additional cost to the Owner.
4. Ferrous Metals - Field Preparation:
- a. Clean surfaces using solvent cleaners recommended by paint manufacturer. Remove rust and mill scale on metal doors, frames, or other ferrous metal components by hand scraping, wire brushing, power scraping, or sandblasting.
 - b. Treat bare and sandblasted or pickled clean metal with a metal treatment wash coat before priming.
 - c. Remove loose prime coats or other applied coatings, and touch up as required prior to further priming or painting. Verify compatibility of primer used for touch-up and repair with shop-applied primers.
5. Galvanized Metals:
- a. Remove dust and dirt with clean, dry rags. Remove oil, grease, or mill-applied protective coatings using solvent cleaners recommended by paint manufacturer.
 - b. Remove white rust with hand or power brushes, taking care not to damage the galvanized coating.
 - c. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods, taking care not to damage the galvanized coating
6. Concrete:
- a. Allow concrete to cure for not less than 28 days prior to application of paint. Repair surface defects as specified in Section 03300. Acid-etch or light sandblast to remove all traces of oil, grease, or form release agents.
 - b. Test for moisture content by taping a one-foot square of heavy gauge, clear polyethylene film to the surface of the concrete; leave in place overnight. If moisture condenses on the inner face of the film, or if the surface of the concrete under the film appears wet or darker in color, allow the concrete to dry longer.
 - c. Determine alkalinity of surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause the finish paint to blister and burn, correct this condition before application.
7. Previously Painted Surfaces:
- a. Removal of lead-based paint in existing structures is not in this Contract. The procedures specified herein for removal of existing paints apply to non-lead-based paints.
 - b. Remove all blistered, peeling, or scaling paint to a sound substrate. Remove heavy chalk and invisible residues by scrubbing with soap and water; rinse clean and allow to dry.
 - c. Completely kill and remove all traces of mildew on existing surfaces prior to application of new primer and finish paint.
 - d. Sand glossy areas and dust clean. Spot prime failed areas as required.
 - e. Remove efflorescence from masonry surfaces by scrubbing with stiff bristle brush and water; use proprietary cleaners as approved by Architect. Acid wash if necessary, and rinse clean.
 - f. Clean rusted or abraded areas down to bare metal using hand or power tools. Spot prime as required.

- C. MATERIALS PREPARATION:
1. Mixing: Mix and prepare paint materials in strict accordance with manufacturer's recommendations.
 2. Containers: Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
 3. Storage: When materials are not in use, store in tightly covered containers.
 4. Stirring: Stir materials to produce mixture of uniform density prior to application. Remove surface films which form during storage; do not mix into the material. Strain materials if necessary to remove film.
 5. Thinning: Do not thin materials unless specifically directed by manufacturer's instructions. Use only the thinners recommended by the manufacturer, and use only to the recommended limits.

3.03 APPLICATION:

- A. GENERAL:
1. Notify the Architect prior to beginning priming or paint application, and between each succeeding coat.
 2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.
 3. Touch up shop-applied prime coats as required to protect damaged or bare areas.
 4. Slightly vary the color of each succeeding coat; do not apply additional coats until the completed coat has been approved. Only the approved coats will be considered in determining the number of coats applied.
 5. Sand and dust between coats as required to remove visible surface defects and to produce a smooth even surface according to the manufacturer's directions.
 6. The number of coats specified is the minimum; apply additional coat or coats at no additional cost to the Owner as required where coverage is incomplete not uniform. The number of coats indicated in the Painting Schedule is in addition to any factory or shop applied prime coats.
 7. The number of coats and the film thickness required are the same regardless of the application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer.
 8. Apply additional coats if undercoats, stains, or other conditions show through final coat of paint until paint film is of uniform finish, color, and appearance. Give special attention to ensure that irregular or curved surfaces, including edges, corners, crevices, welds, and exposed fasteners, receive a dry film thickness equivalent to that of flat surfaces.
- B. DRYING:
1. Allow sufficient drying time between coats, as recommended by the paint manufacturer. Do not recoat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and where application of another coat of paint does not cause the undercoat to lift or lose adhesion.
 2. Increase the drying time as required to suit adverse weather conditions.
- C. BRUSH APPLICATION: Use brushes best suited for the material applied. Brush out and work paint onto the surfaces in a uniform, even film. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, and other surface imperfections will not be accepted.

- D. ROLLER APPLICATION: Use rollers of carpet, velvet back; or high-pile sheep's wool as recommended by the manufacturer for the material and texture required. Roll out and work paint onto the surfaces in a uniform, even film. Cloudiness, spotting, holidays, lap marks, runs, sags, and other surface imperfections will not be accepted.
- E. SPRAY APPLICATION: Apply with airless or air pressure spray equipment as recommended by paint manufacturer for particular product. Apply each coat in a uniform manner to provide the equivalent thickness of brush coats. Do not double back to build up film thickness of two coats in one pass.. Cloudiness, spotting, holidays, lap marks, runs, sags, and other surface imperfections will not be accepted.
- F. MISCELLANEOUS SURFACES AND PROCEDURES:
 - 1. Unless otherwise indicated, finish the interior of closets to match the adjacent room; finish back and edges of hinged or removable panels to match the exposed face.
 - 2. Unless otherwise indicated, finish electric panels, access doors, exposed conduit and piping, registers, grilles vents, and similar items to match adjacent wall surfaces.
 - 3. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.
 - 4. Finish interior of field-finished wall and base cabinets and similar casework to match exterior.
 - 5. Finish exterior doors on tops, bottoms, and side edges same as exterior faces.
 - 6. Paint visible surfaces behind grilles, registers, vents, and louvers flat black.
 - 7. Size, prime, and paint pipe and duct insulation where exposed to public view. Apply not less than one coat of flat latex paint. Remove bands or hangers before painting, and replace after painting is complete.
 - 8. Paint prime coated hardware to match adjacent surfaces.
 - 9. Back-prime or seal millwork which will be concealed in finished Work.
 - 10. In toilet rooms or other wet areas, add a fungicide approved by the Architect and paint manufacturer to paint.

3.04 **CLEANING:**

- A. CLEAN-UP:
 - 1. At the end of each work day, remove empty cans, rags, rubbish, and other discarded paint materials from the site.
 - 2. Upon completion of painting, carefully clean all glass, hardware, metal trim, etc.; remove all misplaced paint spots or spills. Be careful not to scratch or damage adjacent finished surfaces.
- B. FINAL CLEANING: Refer to Section 01740.

3.05 **PROTECTION AND TOUCH-UP:**

- A. PROTECTION:
 - 1. Protect painted finishes from damage due to subsequent construction and finish work until final completion and acceptance of the Work.
 - 2. Provide "Wet Paint" signs to protect newly painted finishes.
 - 3. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.

- B. TOUCH-UP: Touch up surfaces damaged by the work of other trades as required to leave all finished surfaces in like-new condition prior to final completion and acceptance of the Work.

3.06 **PAINT SCHEDULE:**

Notes: -

- a. Refer to Drawings for Paint Type locations.
- b. Refer to Color Schedule for paint colors.
- c. Where surfaces are shop or factory primed, first coat in the schedule below may be spotprime only; verify compatibility of shop or factory prime coat with finish coats specified.
- d. Apply each coat to minimum dry film thickness (DFT) as recommended by manufacturer, but not less than noted herein.

A. EXTERIOR FERROUS AND GALVANIZED METALS, URETHANE FINISH

Handrails, guardrails, and hollow metal work

First Coat: Epoxy-polyamide primer; 3 to 5 mils DFT
Second Coat: Aliphatic urethane enamel, gloss; 3 to 5 mils DFT

B. EXTERIOR FERROUS METALS, INDUSTRIAL ALKYD FINISH

Exposed structural steel

First Coat: Tnemec Series 37 "ChemPrime HS" 2.0 to 3.5 mils DFT
Second Coat: Tnemec Sries 23 "Enduratone"; 1.5 to 3.0 mils DFT
Third Coat: Tnemec Sries 23 "Enduratone"; 1.5 to 3.0 mils DFT

C. EXTERIOR FERROUS METALS, LATEX FINISH

Except as noted above

First Coat: Acrylic latex ferrous metal primer; 2 to 3 mils DFT
Second Coat: Acrylic latex exterior enamel, gloss; 1.5 to 2 mils DFT
Third Coat: Acrylic latex exterior enamel, gloss; 1.5 to 2 mils DFT

D. EXTERIOR GALVANIZED METALS, LATEX FINISH

Flashings, Panel Boxes, Switchgear, Etc.

First Coat: Acrylic latex galvanized metal primer; 1.5 to 2 mils DFT
Second Coat: Acrylic latex exterior enamel, gloss; 1.5 to 2 mils DFT
Third Coat: Acrylic latex exterior enamel, gloss; 1.5 to 2 mils DFT

E. EXTERIOR CONCRETE

First Coat: Styrenated acrylate texture coating; 7 to 9 mils DFT
Second Coat: Styrenated acrylate texture coating; 7 to 9 mils DFT

F. EXTERIOR GYPSUM BOARD SOFFITS:

First Coat: High-build, textured, interior/exterior latex coating

G. INTERIOR FERROUS METALS

All exposed steel at Concourse level ,

First Coat: Tnemec Series 37 "Chem-Prime HS" 2.0 to 3.5 mils DFT
Second Coat: Tnemec Sries 23 "Enduratone"; 1.5 to 3.0 mils DFT
Third Coat: Tnemec Sries 23 "Enduratone"; 1.5 to 3.0 mils DFT

H. INTERIOR FERROUS METALS

All other interior ferrous metals

First Coat: Acrylic latex ferrous metal primer; 1.5 to 2 mils DFT
Second Coat: Acrylic latex enamel, semi-gloss; 1.5 to 2 mils DFT
Third Coat: Acrylic latex enamel, semi-gloss; 1.5 to 2 mils DFT

H. INTERIOR GALVANIZED METALS

First Coat: Acrylic latex galvanized metal primer; 1.5 to 2 mils DFT
Second Coat: Acrylic latex enamel, semi-gloss; 1.5 to 2 mils DFT
Third Coat: Acrylic latex enamel, semi-gloss; 1.5 to 2 mils DFT

J. INTERIOR CONCRETE, EMULSIFED ACRYLIC FINISH

First Coat: Emulsified acrylic coating; 2.0 to 3.0 mils DFT
Second Coat: Emulsified acrylic coating; 2.0 to 3.0 mils DFT

K. INTERIOR CONCRETE, EPOXY FINISH

First Coat: Waterborne epoxy primer; 2 to 3 mils DFT
Second Coat: Waterborne epoxy polyamide coating; 2 to 4 mils DFT
Third Coat: Waterborne epoxy polyamide coating; 2 to 4 mils DFT

L. INTERIOR CONCRETE MASONRY (CMU), EGGSHELL FINISH

First Coat: Acrylic latex block filler; 5 to 15 mils DFT (as required to fill block)
Second Coat: Latex primer; 1.5 to 2 mils DFT
Third Coat: Latex enamel, eggshell; 1.5 to 2 mils DFT
Fourth Coat: Latex enamel, eggshell; 1.5 to 2 mils DFT

M. INTERIOR CONCRETE MASONRY (CMU), EPOXY FINISH

First Coat: Cementitious acrylic block filler; 10 to 15 mils DFT (as required to fill block)
Second Coat: Waterborne epoxy primer; 2 to 3 mils DFT
Third Coat: Waterborne epoxy polyamide coating; 2 to 4 mils DFT
Fourth Coat: Waterborne epoxy polyamide coating; 2 to 4 mils DFT

N. INTERIOR GYPSUM WALLBOARD, LATEX EGGSHELL

First Coat: Polyvinyl latex (PVA) primer; 1.5 to 2 mils DFT
Second Coat: Latex enamel, eggshell 1.5 to 2 mils DFT

O. INTERIOR GYPSUM WALLBOARD, LATEX FLAT

First Coat: Polyvinyl latex (PVA) primer; 1.5 to 2 mils DFT
Second Coat: Latex wall paint, flat; 1.5 to 2 mils DFT

P. INTERIOR GYPSUM WALLBOARD, EPOXY FINISH

First Coat: Vinyl latex (PVA) primer; 1.5 to 2 mils DFT
Second Coat: Waterborne epoxy polyamide coating; 2 to 4 mils DFT
Third Coat: Waterborne epoxy polyamide coating; 2 to 4 mils DFT

Q. INTERIOR WOOD, LATEX FINISH

First Coat: Alkyd or latex enamel undercoat; 1.5 to 2 mils DFT
Second Coat: Latex enamel, semi-gloss; 1.5 to 2 mils DFT
Third Coat: Latex enamel, semi-gloss; 1.5 to 2 mils DFT

END OF SECTION 09900

SECTION 116643 – SCOREBOARD SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. LED video displays
- B. LED ribbon displays
- C. LED video display controllers
- D. Video processor
- E. Scoring Console

1.02 REFERENCES

- A. Standard for Electric Signs, ETL listed
- B. Standard for Control Centers for Changing Message Type Signs
- C. Federal Communications Commission Regulation Part 15
- D. National Electric Code

1.03 DEFINITIONS

- A. “Bidder” shall mean each vendor that has received the RFP and will be bidding on the project.
- B. “Contractor” shall mean the vendor that has been selected to provide products or services for University of Colorado.
- C. “Installer” shall mean the vendor responsible for display installation.
- D. “Owner” shall mean University of Colorado.

1.04 SUBMITTAL

- A. The Bidder shall provide a complete technical submittal within 60 days of contract award and shall not proceed with LED video display manufacture until the Engineer has approved the submittal.
- B. Submit:
 - 1. All LED display manufacturer qualifications, as specified herein.
 - 2. Pricing for a turnkey installation, including pricing for the provision and installation of all items necessary to provide a complete, workable and operational system.
 - 3. LED display shop drawing.
 - 4. System riser diagram.
 - 5. Display power requirements, including legs and amps per leg.
 - 6. LED display control software operator’s manual.
 - 7. LED display installation and maintenance manual.
 - 8. List of spare parts that will be provided for each display component.
 - 9. Equipment or scope-of-work responsibilities not specifically addressed in these specifications, but realized by the Bidder to be essential for system installation and functionality.

1.05 QUALITY ASSURANCE

- A. For Indoor use.
- B. Source Limitations: Obtain each display component from a single manufacturer.
- C. ETL listed to UL Standards 48 and 1433
- D. NEC compliant
- E. FCC Class A Compliant
- F. ETLC listed to CAN/CSA 22.2

1.06 QUALIFICATIONS

A. Bidder shall:

1. Provide financial records for the previous three (3) years.
1. Provide a minimum of ten (10) facilities (name of facility, installation photo, contract name, title, address and phone number) where similar Bidder-proposed product is installed.
2. Have been in the business of manufacturing permanently mounted outdoor displays for a minimum period of five (5) years prior to the contract bid date.
3. Letter of surety from bonding agent, stating ability to provide 100% payment/performance bond.
4. Design the module, design and build the circuitry and circuit boards, take the core components (discreet LEDs, transistors, resistors, circuit boards, power supplies, etc.), assemble and integrate the units, calibrate for uniformity, assemble into the mounting structure and create a video processor to drive live video through the display.
5. Integrate with existing scoring displays and controller as well as statistic program.
6. Provide a toll-free help desk number that will be manned during normal business hours.
7. Operate a company-owned and staffed office located within 50 miles of Boulder, Colorado for optimum service response.
8. Provide 30 standard animation sequences as well as a standard company price sheet and rate card for content creation.

B. Documentation that proves the Bidder complies with these requirements shall be provided with the LED display manufacturer's pre-build technical submittal. This submittal shall also include references and project information for all of the systems referenced above, including:

1. Equipment owner/operator agency name.
2. Contact person name, telephone number, fax number, and e-mail address.
3. Display system name and location of operations control center (project name/number).
4. Display quantity.
5. Display commissioning date (first date of successful on-site operation).
6. LED display size (pixel rows by pixel columns) and type (full-color video LED display or monochrome LED display).
7. Display housing access.
8. Type of communications backbone used (fiber optic, cable, direct, etc.).

C. Experience with manufacturing the following types of electronic sign products shall not satisfy the requirements of this LED display specification:

1. Backlit displays.
2. Split-flap displays.
3. Displays that have a pixel technology comprised of something other than high-intensity light emitting diodes (LED). Examples of unacceptable technologies are incandescent lamp, liquid crystal, fiber optic, flip disk, flip-fiber combination, and flip-LED combination.

1.07 DELIVERY, STORAGE & HANDLING

- A. Product delivered on site.
- B. Equipment to be housed in a clean, dry environment.
- C. Equipment shall be quoted FOB Boulder, Colorado via independent carrier.
- D. Bidder shall deliver, install and make operational all equipment prior to the first event on DATE.
- E. Installation will include relocating existing scoring and backlit ad panel displays.
- F. Bidder shall be responsible for the disassembly, removal, electrical disconnect and preparing for on-site storage of the EXISTING DISPLAY.

1.08 WARRANTY/SERVICE PLAN

- A. There shall be a one-year on-site labor and parts warranty. Warranty shall cover:
 - 1. Repair center repair or replacement of components for Bidder-supplied control equipment.
 - 2. Bench labor.
 - 3. Freight to customer for return of repaired parts.
 - 4. Repair, replacement of electronic components in Bidder repair center.
 - 5. Technical hotline assistance/phone consultation available at no cost to the customer.
 - 6. Weekend technical phone assistance.
 - 7. Exchange parts available for same-day shipment.
 - 8. Provide an exchange program to supply replacement parts for components that fail during the coverage period. To minimize downtime exchange parts shall be shipped on either the same day or the following day following notification. The manufacturer shall also enclose an air bill for return of the defective components.
 - 9. Provide permanent service location within 50 miles of Boulder, Colorado.
- B. As with all LED displays, the LED display will eventually degrade to the point where pixels will need to be replaced even though the pixels will still be operating. Bidder's warranty does not cover LED degradation.

1.09 OWNER'S INSTRUCTIONS

- A. READ THE ENTIRE SPECIFICATION CAREFULLY! Change orders will not be allowed for Bidder error in estimating the cost of the project.
- B. These specifications shall act as a description of the minimum display system desired by University of Colorado. Bidders are not encouraged to offer alternatives, except when specifically requested within these specifications.
- C. Upon completion of the installation, a member of the Bidder's staff must conduct a training program to provide the Owner's staff with operating, basic preventative maintenance and system level troubleshooting knowledge of all equipment subsystems. Conduct this training program at the project location or at a location selected by the Owner. Schedule at the mutual convenience of the Owner and Installer, after demonstration and acceptance testing.
- D. Bidder to provide thorough training for the operation of the operating software and as well as integration with existing scoring and statistics systems.
- E. Bidder to provide training materials free from any copyright restrictions, and upon request from the Owner, furnish a reproducible set of these materials.

1.10 MAINTENANCE

- A. Service accessibility for all display components shall be from the front and rear.
- B. A proposed maintenance program with a list of recommended spare parts shall be part of the Bidder's proposal along with associated costs.
- C. Two percent (2%) of recommended spare parts to be included
- D. Proposal shall include detailed information regarding service accessibility of all display components.

PART TWO: PRODUCTS

2.01 MANUFACTURERS

- A. Daktronics, Inc., 331 32nd Avenue, P.O. Box 5128, Brookings, South Dakota 57006-5128

2.02 PRODUCTS

- A. LED video displays
- B. LED ribbon displays
- C. LED video display controllers
- D. Video processor

E. Scoring Console

2.03 LED VIDEO DISPLAY

A. General Information

1. Pixel Design: 3-in-1 surface-mount device.
2. Minimum Resolution: No less than 320 pixels in height and 576 pixels in length.
3. Minimum Active Viewing Area: Approximately 10'6" in height and 19' 0" in length.
4. Must be factory calibrated as well as ability to calibrate once installed.

B. Display Capabilities

1. Gradations Per Color: 16,384.
2. Color Capability: 4.4 trillion colors.
3. Refresh Rate: 1,000 Hz as defined by the number of times per second the display image is repainted in intensity.

C. Video Processing

1. Video Frame Rate: 50/60 frames per second.
2. Graphic Frame Rate: 30 frames per second.
3. Processing Architecture: 19-bit (14-bit color processing; 5-bit dimming capability).
4. System Architecture: 100% digital.
5. Video Enhancement: Color space conversion, adjustable gamma correction, proprietary sharpening technology and enhancement algorithms for optimal picture quality.
6. Standards Supported: NTSC, PAL and HDTV.
7. Required Video Inputs: Analog composite (BNC), S-Video (4 pin mini-DIN), analog component (BNC) and SDI SMPTE, ITU-R BT.601-4 (BNC).

D. LED Quality

1. Suppliers: The highest quality LEDs from the worlds foremost LED manufacturers.
2. Quality Control: Sorted by intensity and color wavelength.
3. LED Lifetime: 100,000 hours of operation as defined by time at which display intensity has decreased to 50 percent of the original intensity.

E. Display Construction

1. Service Access: Front or rear.
2. Cabinet Depth: 8" (203 mm).
3. Cabinet Construction: All-aluminum construction for lightweight and corrosion resistance.
4. Weatherproofing: Sealed cabinet, potted modules and conformal-coated display electronics suitable for high humidity environments.

F. Viewing Characteristics

1. Module Intensity: 2,000 nits (adjustable).
2. Brightness Control: 32 levels (manual, scheduled or automatic).
3. Contrast Ratio: 1,000:1.
4. Suggested Viewing Angle: 140° (70° off center), both horizontally and vertically, as defined by the angle at which display intensity drops to 50 percent of direct frontal intensity.

G. Display Interface

1. Each of the full-color video displays MUST have the ability to interface and display real-time data from the control system without the need for a duplicate or redundant input.

2.04 LED RIBBON DISPLAYS

A. General Information

1. Pixel Design: 1 red, 1 green and 1 blue lamp-style LED, devoted exclusively to that pixel.

2. Minimum Resolution:
 - a. Display 1: No less than 32 pixels in height and 1584 pixels in length (Qty. 2)
 - b. Display 2: No less than 32 pixels in height and 1184 pixels in length (Qty. 2)
3. Minimum Active Viewing Area:
 - a. Display 1: Approximately 2' 06" in height and 120" in length.
 - b. Display 2: Approximately 2' 06" in height and 89"6" in length.

B. Display Capabilities

1. Gradations Per Color: 16,384.
2. Color Capability: 4.4 trillion colors.
4. Refresh Rate: 1,000 Hz as defined by the number of times per second the display image is repainted in intensity.

C. Video Processing

1. Video Frame Rate: 50/60 frames per second.
2. Graphic Frame Rate: 30 frames per second.
3. Processing Architecture: 19-bit (14-bit color processing; 5-bit dimming capability).
4. System Architecture: 100% digital.
5. Video Enhancement: Color space conversion, adjustable gamma correction, proprietary sharpening technology and enhancement algorithms for optimal picture quality.
6. Standards Supported: NTSC, PAL and HDTV.
8. Required Video Inputs: Analog composite (BNC), S-Video (4 pin mini-DIN), analog component (BNC) and SDI SMPTE, ITU-R BT.601-4 (BNC).

D. LED Quality

1. Suppliers: The highest quality LEDs from the worlds foremost LED manufacturers.
2. Quality Control: Sorted by intensity and color wavelength.
3. LED Lifetime: 100,000 hours of operation as defined by time at which display intensity has decreased to 50 percent of the original intensity.

E. Display Construction

1. Service Access: Front, rear or top.
2. Cabinet Depth: 8" (203 mm).
5. Cabinet Construction: All-aluminum construction for lightweight and corrosion resistance.
6. Weatherproofing: Sealed cabinet, potted modules and conformal-coated display electronics suitable for high humidity environments.

F. Viewing Characteristics

1. Module Intensity: 2,000 nits (adjustable).
2. Brightness Control: 32 levels (manual, scheduled or automatic).
3. Contrast Ratio: 1,000:1.
4. Suggested Viewing Angle: 140° (70° off center), horizontally and 60° (30° off center) vertically, as defined by the angle at which display intensity drops to 50 percent of direct frontal intensity.

G. Display Interface

1. Each of the full-color video displays **MUST** have the ability to interface and display real-time data from the control system without the need for a duplicate or redundant input.

2.05 VIDEO/MATRIX CONTROLLER

A. Standard Hardware Features

1. Windows® XP
2. 32-bit graphics card
3. AMD Dual-core Opteron™ processor
4. RAM: 2 GB
5. Hard Disk: 1.2 TB

6. 48x DVD/CD-R/RW drive
7. 3.5" 1.44 MB floppy disk drive
8. Mouse
9. Keyboard
10. Monitor

B. General Software Features

1. Windows® XP to allow the use of other display software.
2. Simultaneous display and edit capability.
3. Quick display to direct access from any point in the operation to the display function.
4. Animation rates of up to 30 frames per second.
5. Live video feed; bidder shall furnish software and hardware cards to display a composite video source live in real time to the full matrix display. Bidder shall also furnish video source live in real-time on control monitor.
6. Support optional input devices such as a mouse, track ball, scanner and video image reader.
7. "Windowed" display to give split-screen showing.
8. Display time and temperature (temperature requires optional sensor).
9. Automatic rebooting of system disk shall occur after power outage; system clock and calendar shall continue to function during power failure.
10. Scheduling in 12- or 24-hour formats.
11. Password protection system to restrict access.
12. Easy access, operator-editing icons for language-independent programming.
13. Icon and pull-down menu programming features.
14. Help screens.
15. Control multiple signs directly.
16. Lamp/electronic diagnostic feature.
17. Networking software feature.
18. Interface with digital audio recording and playback system.
19. Modem hookup for downloading of software/factory diagnostics.
20. Must be capable of file real-time data that allows operators to create a sequence with information such as statistics, time, date or temperature that automatically updates without user intervention.

C. Software Display Functions

1. The ability to receive and display real-time data from up to 16 external sources.
2. The ability to enter data into a text file manually allowing the information to be available for use in a sequence.
3. The ability to control and download to remote displays.
4. Unlimited files for quick display sequences.

D. Software Edit Functions

1. Display of true type fonts and other Windows® compatible character fonts.
2. Image and animation import of multitude different formats, including BMP, JPEG, PCX and AVI.

E. Printout Functions

1. Bidders shall provide:
 - a. Scaled, high resolution printouts to show detail or high density to show the sequence progression.
 - b. Printouts of individual frames or ranges of frames.

F. Software Specifications

1. Saving work feature
2. Auto effects default feature
3. Color palette feature
4. Quad/pixel feature

2.06 VIDEO PROCESSOR

- A. Standards Accepted
 1. NTSC, ATSC and PAL
 2. VGA/DVI
 3. HDTV/SDTV

- B. Input Formats
 1. Four (4) SDI/HD-SDI
 2. Four (4) component/HD-component (Three (3) BNC)
 3. Four (4) composite (1 BNC) or four (4) S-video (Two (2) BNC)
 4. Two (2) VGA/DVI (each up to UXGA/DVI-I)
 5. One (1) proprietary signal (Fiber optic or BNC)

- C. LED Display Output Formats
 1. One (1) proprietary signal (Fiber optic)
 2. Two (2) proprietary signals (BNC)

- D. Monitor Output Formats
 1. One (1) component (3 BNC) or
 2. One (1) S-video (2 BNC) or
 3. One (1) composite (1 BNC)
 4. One (1) VGA/DVI (DVI-I)

- E. Pass-Throughs
 1. Four (4) SDI/HD-SDI (BNC)

- F. Control Options
 1. One (1) proprietary control input (9-pin serial)
 2. One (1) network interface (Cat.-5E)
 3. One (1) display diagnostics input (ST fiber optic)
 4. One (1) display diagnostics output (ST fiber optic)

- G. Capabilities
 1. Auto-detect format and resolution
 2. Noise reduction

- H. Color space conversion
 1. 3 x 3 full-matrix
 2. Proprietary LED conversion

- I. Edge and motion adaptive de-interlacing
 1. Bad edit detection
 2. Static/freeze frame
 3. Multi-directional motion detection
 4. Inter-field motion detection
 5. Film mode detection

- J. Detail enhancement
 1. Image sharpening
 2. Diagonal edge detection

- K. Scaling
 1. Aspect ratio independent
 2. Input active area control
 3. Horizontal and vertical scaling control
 4. Horizontal and vertical panoramic zoom
 5. Frame rate conversion to/from any refresh rate

- L. Input-specific picture controls
 - 1. Color
 - 2. Gamma
 - 3. Brightness
 - 4. Contrast

- M. Video mixing
 - 1. Blending
 - 2. Wipe and mix effects
 - 3. Seamless source switching
 - 4. Flexible positioning of sources
 - 5. Multi-zone sources for PBP (pictures by pictures)
 - 6. Alpha blend sources for POP (picture on picture)
 - 7. Superimpose sources for PIP (picture in picture)

- N. Control and integration
 - 1. Cascade multiple processors for feed multiple displays
 - 2. Chain multiple processors for additional source inputs
 - 3. Network processors for LAN communication
 - 4. Control all processor functions through selected controller
 - 5. Pre-program presentation layouts through selected controller

- O. Specifications
 - 1. Width: 483 mm (19"), Height: 133 mm (5.25"), Depth: 584 mm (23")
 - 2. Power: 110/220V (50/60Hz)
 - 3. Weight: 12.30 kg (27.10 lbs)
 - 4. 3RU rack-mount case

PART 3 EXECUTION

3.01 EXAMINATION

- A. Mounting structure to be installed by contractor to support desired displays in all locations. Verify that separate conduit is in place for power and data to display, unless fiber is being used. Verify that all control equipment has access to 120 VAC.

3.02 PREPARATION

- A. A certified engineer registered in the State of Colorado must stamp all structural drawings.
- B. Contractor to obtain all necessary permits.
- C. Contractor to locate utilities.
- D. Contractor to provide an on-site installation coordinator or superintendent to supervise all on-site work. The installation coordinator or superintendent must be a direct employee of the Contractor.

3.03 INSTALLATION

- A. Material or equipment required for the provision and installation of this LED video system that is not expressly addressed in this RFP is understood to be the responsibility of the Bidder.
- B. Bidder to research the facility's events schedule to ensure there are no scheduling conflicts regarding installation of the display components.
- C. Support structure design depends on the mounting methods, display size and weight. The structure design is critical and should be done only by a qualified individual. It is the Owner's responsibility to ensure that the structure and mounting hardware are adequate.

- D. The Bidder shall be responsible for the provision and installation of all structural steel required for the accommodation of the new systems.
- E. The Contractor shall be responsible for providing all display equipment shown on the noted drawings and shall be responsible for all architectural treatment required to give the entire display the general appearance as shown on the drawings.
- F. The Contractor shall be responsible for assembly and mounting of all display components onto the Contractor-supplied structure.
- G. It is the Owner's responsibility to ensure that the installation meets local standards. The mounting hardware shall be capable of supporting all components to be mounted. A qualified structural engineer must inspect all mounted displays.
- H. Possible power and signal entrances are designated by center punches. Separate conduit must be used to route the power, signal in wires, and signal out wires.
- I. Displays must be grounded according to the provisions outlined in Article 250 of the National Electrical Code. The display must be connected to earth-ground. Proper grounding is necessary for reliable equipment operation and protects the equipment from damaging electrical disturbances and lightning.
- J. All required power to the displays shall be the responsibility of the Electrical Contractor.
- K. All power to the control location shall be the responsibility of the Electrical Contractor.
- L. Bidder shall furnish and install required cables for a fully operational system.
- M. Bidder shall provide all required materials and labor to provide display mounting, cable terminations, system checkout and local operator training at the time of installation.
- N. Bidder to provide an on-site supply of spare parts, which will ensure the timely repair of component failures.

END OF SECTION

SECTION 16010 – BASIC ELECTRICAL REQUIREMENTS

PART 1 – GENERAL

1.1 SECTION INCLUDES

- Provisions, Description, and Definitions
- Quality Assurance
- Work Included and Not Included
- Related Work Specified Elsewhere
- Coordination with other work
- Standards for Materials
- Prior Approval or Substitution of Equipment and Materials
- Code Compliance, Fees and Permits
- Drawings and Specifications
- O&M Manual and Instruction
- General Project Execution Requirements
- Guarantee
- Safety and Indemnity

1.2 PROVISIONS

- A. The general provisions of the contract, including General and Supplementary Conditions and General Requirements, apply to the work specified in this section.
- B. Provisions of this section shall apply to all sections of Division 16.
- C. Submit product data and shop drawings of all electrical equipment, complying with the requirements in Division 01 and with the specific requirements of appropriate sections of Division 16 specifications.

1.3 DESCRIPTION

- A. Furnish all materials, equipment, tools, and labor and install electrical work as indicated on the drawings and as specified herein. Connect all new facilities to be installed for a completely coordinated and integrated electrical system. It is the intent and purpose of these contract documents that upon completion of the project, the electrical installation, including all systems, shall be complete and operable in all respects. Completely connect all systems, equipment, motors, heaters, lighting fixtures, outlets, devices, etc., shown, noted, or required, from source of power to final connections and leave ready for satisfactory operation. Furnish and install any minor items omitted from design but obviously necessary to accomplish the above intent.
- B. One prime electrical subcontractor shall be responsible for all materials, equipment, and labor under Div. 16.
- C. It shall be the responsibility of the electrical contractor to coordinate all work of other contractors on the project. This shall include, but not be limited to the responsibility for the coordination of the video scoreboard, concrete pads and transformers.
- D. The Contractor must determine what means and methods best fit the design intent and requirements, and coordinate the different trades on this project accordingly.

1.4 DEFINITIONS

- A. The term "Electrical Contractor" or "Contractor" used throughout Division 16 shall mean the Prime Electrical Subcontractor, and/or the General Contractor.
- B. Instructions such as "Provide the outlets" shall mean the same as though the words "This Contractor shall" preceded each such instruction. "Provide" shall mean "Furnish and Install."
- C. Where the words "Accepted" or "Acceptable" are used, such "Accepted" or "Acceptable" action by the Engineer and/or Architect denotes that the work or equipment item is in conformance with the design concept of the project and, in general, complies with pertinent information given in the Contract Documents.

1.5 QUALITY ASSURANCE

- A. Only quality workmanship will be accepted. Haphazard or poor installation practice will be cause for rejection of work.
- B. Where specifications call for an installation to be made in accordance with Manufacturer's recommendations, a copy of such recommendations shall at all times be kept in job superintendent's office and shall be available to Architect's/Engineer's and/or Owner's representative.
- C. Upon completion of work, all equipment and materials shall be installed complete, thoroughly checked, correctly adjusted, and left ready for intended use or operation. All work shall be thoroughly cleaned and all residue shall be removed from surfaces. Exterior surfaces of all material and equipment shall be delivered in a perfect unblemished condition.
- D. Contractor shall provide a complete installation, including all required labor, material, transportation, insurance, permits, and taxes.
- E. The electrical contractor shall have been registered continuously in the state of Colorado for a minimum of five years as an electrical contractor, and shall maintain such registration in good standing throughout the duration of the project.
- F. The electrical contractor shall perform a minimum of 50% of Division 16 work with direct employees; the remaining work may be performed by subcontractors to the prequalified Electrical Contractor.
- G. Within 4 weeks of shop drawing approval, the Contractor shall submit a detailed sequence of work for review and approval by the University. This report will detail all work proposed by the Contractor, including time sequence, tasks, responsibility, and estimated completion times. The report will include a detailed breakdown of University/Contractor coordination checkpoints and proposed safety measures (lockout/tag-out, grounding, tailgate meetings, etc.).
- H. Electrical Contractor shall not have any pending OSHA violations against the company at the time of bidding.
- I. The Electrical Contractor shall guarantee that all work will be completed in accordance with the NESC, National Electrical Code (2002), OSHA, and any other applicable codes.

1.6 SPECIAL ELECTRICAL PROVISIONS

A. Bidding Requirements:

1. Electrical Contractor shall give evidence of being able to be bonded to 1-1/2 times job value. A letter shall be provided by the bonding agency assuring capability of bonding this level and associated rates.
2. The successful firm shall be capable of starting work immediately upon receipt of contract award and shall have the resources to complete the outage-related work over one weekend. This includes the shutdown of existing equipment and installation, testing, and load transfer to new transformers and panelboards.

B. Qualification Requirements:

1. Contractors bidding this project must complete AIA Document A305-1986, "Contractor's Qualification Statement" and submit it with their proposal for information purposes.
2. In addition to the information requested in #1 above, the Contractor must provide a statement(s) indicating that they meet the following minimum requirements:
 - a. List a minimum of two projects completed in the last five years that were similar in size (or larger), complexity and type. For each project list:
 - 1) Name and location of project
 - 2) Name, address and phone number of the client/Owner and the Owner's representative.
 - 3) Contract type (prime or subcontract) and contract value (or subcontract value).
 - 4) Year in which work was performed.
 - b. If required, list two projects on which the Contractor acted as a Prime Contractor (may be the same projects listed in paragraph (a), if applicable).
 - c. The firm and its operating officers (above the level of project manager) shall have been involved in electrical contracting for at least five years.
 - d. List project values (or subcontract values, if applicable) which total at least five times job value of electrical work in the last five years completed by the firm or its operating officers.

C. General Requirements:

1. The successful firm shall provide a project supervisor of proven experience, and be willing to leave him (or her) on the project for the duration of the project, unless acceptable alternative arrangements are made with the Owner.
2. The successful firm must have a business office which is staffed during normal working hours.
3. The project manager of the successful firm shall have paging capability during normal working hours.

D. Craftsman Regulations:

1. Contractors shall include no more than one indentured apprentice per journeyman electrician. Apprentices shall be under the direct supervision of a licensed electrician at all times.
2. Helpers may be assigned to the project as required to do laboring-type tasks, but may not do any installation type electrical work.

1.7 WORK INCLUDED

A. Power systems including panelboards, transformers, feeders, and other items shown or required.

1. Provide new power to scoreboard and video displays.
2. Certain equipment on this project is existing. When such is the case, description of these items shall be indicated on drawings or described herein. Unless otherwise noted, all labor, materials, and/or equipment for complete installation of electrical work shall be provided under this Division.

3. Power distribution modifications.

1.8 STANDARDS FOR MATERIALS

- A. All materials shall conform with the current applicable industry standards. Workmanship and neat appearance shall be as important as electrical and mechanical operation. Defective or damaged materials shall be replaced or repaired prior to final acceptance in a manner meeting approval of Architect and/or Engineer and at no additional cost to Owner. The foregoing rules, standards, regulations, specifications, recommendations, and requirements shall not relieve the Contractor from furnishing and installing higher grades of materials and workmanship that are specified herein or indicated on drawings.
- B. In addition to the latest federal and state regulations, the latest editions of the following standards are minimum requirements:
 1. Underwriters' Laboratories, Inc. (UL)
 2. National Electrical Manufacturer's Association (NEMA)
 3. American National Standards Institute (ANSI)
 4. Insulated Cable Engineer's Association (ICEA)
 5. Institute of Electrical and Electronic Engineers (IEEE)
 6. Association of Edison Illuminating Companies (AEIC)
 7. National Electrical Code (NEC)
 8. Certified Ballast Manufacturers (CBM)
 9. Electrical Testing Laboratories (ETL)
 10. Federal Specifications (Fed. Spec.)
 11. Independent Testing Laboratories (ITL)
 12. National Electrical Safety Code (NESC)
 13. National Electrical Contractors Association (NECA)
 14. National Fire Protection Association (NFPA)
 15. Occupational Safety and Health Act (OSHA)
 16. University Standards
- C. The work shall be done in conformance with these codes and standards. These codes and standards shall be considered as the minimum requirements for the Work. Items shown on the drawings or specified in these Specifications which exceed the minimum requirements of the code shall be installed as shown on the drawings or specified in these Specifications. Any known conflict between the specifications or the drawings and the codes or suspected error in the Specifications or the drawings shall be brought to the attention of the Architect/Engineer prior to the bid; otherwise, resolution of the error or code conflict shall be at the expense of the Contractor.

1.9 PRIOR APPROVAL OR SUBSTITUTION OF EQUIPMENT AND MATERIALS

- A. Refer to Division 01.
- B. Equipment of other manufacturers which is equal to or superior to that specified may be proposed in accordance with Division 01. Manufacturers and catalog numbers shown in these specifications or on the drawings followed by "OR EQUAL" are intended as a guide to quality. Substitute equipment of other manufacturers which is equivalent to or superior to that specified may be proposed; however, such prior approvals must be accepted in writing by the Architect/Engineer seven days prior to bidding. If prior approvals are not requested or granted, substitute materials and equipment may be submitted under the substitutions section of Division 01. The Engineer's decision regarding substitutions shall be final. It shall be the Contractor's responsibility under this division of the specifications to notify all related trades of the accepted substitutions and to assume full responsibility for all costs caused as a result of the substitution.

1.10 CODE COMPLIANCE

- A. All work and materials shall comply with the latest rules, codes, and regulations, but not limited to the following. Code compliance is mandatory.
 - 1. NFPA 70 - National Electrical Code (NEC)
 - 2. IBC - International Building Code
 - 3. NFPA 101 - Life Safety Code
 - 4. OSHA, Occupational Safety and Health Act
 - 5. All other applicable federal, state and local laws and regulations
 - 6. University Standards
- B. Code compliance is mandatory. Nothing in these drawings and specifications permits work not conforming to these codes. Where work is shown to exceed minimum code requirements, comply with drawings and specifications.
- C. No work shall be concealed until after inspection and approval by proper authorities. If work is concealed without inspection and approval, Contractor shall be responsible for all work required to be opened or exposed and restore the concealed areas in addition to all required modifications.

1.11 DRAWINGS AND SPECIFICATIONS

- A. Refer to Supplementary Conditions for additional requirements.
- B. Drawings are diagrammatic and indicate general arrangement of circuits and outlets, locations of switches, panelboards and other work. Drawings and specifications are complementary each to the other, and what is called for by one shall be binding as if called for by both. Data presented on drawings is as accurate as planning can determine, but accuracy is not guaranteed and field verification of all dimensions, locations, levels, etc. to suit field conditions is directed. Review all architectural and civil drawings, and adjust all work to conform to all conditions shown therein. Architectural drawings shall take precedence over all other drawings. Discrepancies between different drawings or between drawings and specifications or regulations and codes governing installation shall be brought to attention prior to bid.
- C. Most direct routing of conduits and wiring is not assured. Exact requirements shall be governed by actual conditions of the job. Consult all other drawings in preparation of the bid. Extra lengths of wiring or addition of pull or junction boxes, etc., necessitated by such conditions shall be included in the bid. Check all information and report any apparent discrepancies before submitting bid.
- D. Right is reserved to make reasonable change in location electrical equipment (ten feet in any direction) prior to work without increasing contract cost.

1.12 MINOR CHANGES AND DEVIATIONS

- A. Furnish and install entire electrical installation as designed and in accordance with contract drawings and specifications. Minor deviations necessitated by field conditions or equipment being supplied may be made upon approval of Architect/Engineer. Changes in design and installation shall be done in manner as provided for in "Contract Documents" or Division 01.

PART 2 – PRODUCTS

2.1 EQUIPMENT AND MATERIALS

- A. Refer to related requirements in Division 01. Furnish and install all material, equipment, and devices which are new, first quality, of a type as listed and labeled by Underwriters Laboratories, Inc., in a manner accepted by the Architect/Engineer, and pay for all equipment or materials damaged in the course of installation or test. Basic bid shall include manufacturers and catalog numbers as shown in these specifications or on the drawings with "NO EQUALS" unless specifically indicated. Specified materials, equipment, and devices shall be furnished and installed under the contract unless changed by mutual agreement between Contractor and Engineer. Where several manufacturers are indicated for material, equipment, or devices, Contractor shall have choice of manufacturers listed.
- B. Equipment Requirements: The electrical requirements for equipment specified or indicated on the drawings are based on information available at the time of design. If equipment furnished for installation has electrical requirements other than indicated on the electrical drawings, the Contractor shall make all adjustments to wire and conduit size, controls, overcurrent protection, and installation as required to accommodate the equipment supplied, without additional expense to the Owner.
- C. All similar materials and equipment shall be the product of the same manufacturer.
- D. Materials and equipment shall be standard products of manufacturers regularly engaged in the production of such material and shall be the manufacturer's current and standard design.
- E. All equipment and material shall be designed, constructed, and tested to operate successfully at 6,000 feet above sea level and -22°F °F to 104°F °F ambient temperature range unless otherwise specified, with the average relative humidity of 10% to 70% unless otherwise specified.

PART 3 – EXECUTION

3.1 CONDITIONS AT SITE

- A. Prior to bidding, examine the site carefully and be fully familiar with existing conditions and be fully informed of all utility, state, and local requirements and regulations that will affect the electrical work.
- B. Visit to site is required of all bidders prior to submission of bid. All will be held to have familiarized themselves with all discernible conditions, and no extra payment will be allowed for work required because of these conditions, whether specifically mentioned or not.
- C. Existing conduits, pipes, utility lines, tanks, equipment, or other obstructions whether underground, concealed, or exposed are not indicated on drawings. Locate such obstructions prior to start of work so as to route and locate all new work to void these obstructions. Repair or replace, at no cost to Owner, existing installations where damaged during course of construction.
- D. Refer to Division 01 for additional requirements.

3.2 LICENSE, FEES, AND PERMITS

- A. Arrange for required inspections and pay all license, permit and inspection fees. Furnish a certificate of final inspections and approval from all local authorities having jurisdiction over electrical installation.

3.3 SERVICE INTERRUPTIONS

- A. Any electrical work that will interfere with or interrupt the operation of buildings, or services, must be coordinated with the Owner and Contractor at least fourteen calendar days in advance for proper scheduling. The Contractor shall submit a request for the outage to the Owner detailing the reasons for the outage, areas affected, a detailed sequence of procedures to accomplish work, estimated maximum length of time, and the date and time of day the outage will occur. The detailed sequence of procedures shall include all items in the outage broken down by time. The Contractor shall obtain written authorization from the Owner for all proposed outages. These connections may have to be done at any hour of any day at no increase in contract price. Outages shall be for minimum time periods. All preparation work shall be planned and executed prior to the actual outage. In all cases, all material shall be furnished by the Contractor. Submit written plan with time line for removal, installation and connection of generator sets. The Contractor will be responsible for any temporary power required.
- B. Prior to disconnecting or re-energizing power equipment (transformers, primary switches, etc.), the Contractor shall identify and/or verify phase rotation of conductors.

3.4 RELATION WITH OTHER TRADES

- A. Contractor shall coordinate work of this section with other trades to avoid conflict and to correct rough in and other connections for equipment furnished under other trades that required electrical connections. Inform contractors of other trades of required clearances of accesses for or around electrical equipment to maintain serviceability and code compliance.
- B. Verify equipment dimensions and requirements with provisions specified under this section of work, and report any discrepancies to Architect/ Engineer in ample time to prevent delays or unwarranted changes of work.

3.5 SHOP DRAWINGS AND MATERIALS LIST

- A. In accordance with Division 01, and as required by individual sections of Division 16, submit to Architect/Engineer complete shop drawings, product information and materials lists as noted below, for review within 30 days after award of contract. All proposed deviations from specifications must be clearly listed under a prominent heading entitled "Deviations". Submittals required as follows:
 1. Materials Lists: Identifying information covering all electrical materials.
 2. Lighting Fixtures: Manufacturer's specifications sheets and ETL, ERL or ITL photometric data.
 3. Switchboards: Shop fabrication details and technical data sheets..
 4. Transformers and switchgear: Shop fabrication details and technical data sheets.
- B. In addition to the above requirements, equipment wiring diagrams, including circuit arrangements, bussing, size, electrical ratings, equipment dimensions, weights, equipment arrangements, and NEMA ratings shall be provided for all cable and devices, low-voltage switchboards, and luminaries.

- C. Prior to submitting shop drawings for review, the Contractor shall review same and signify by stamping and initialing, compliance with plans and specifications and for dimensional suitability for the application. If any deviation from the specified criteria for any item of material exists, such deviation shall be stated in writing and incorporated with the shop drawing submittal. Review of shop drawings by the Architect/Engineer shall not constitute agreement of any deviations from the plans and specifications unless such deviations are as specifically listed as required above, and such deviations accepted. Review of shop drawings by the Architect/Engineer shall not relieve the Contractor from responsibility for errors or omissions in same. Resubmittal costs beyond one are the expense of Contractor.

3.6 RECORD DRAWINGS AND INFORMATION

- A. Refer to Division 01.
- B. Maintain a contract set of electrical drawings at the site. Neatly mark all changes and deviations from the original drawings. Use a color that contrasts with the prints. This shall be a separate set of drawings, not used for construction purposes, and shall be kept up to date as the job progresses and shall be made available for inspection by the Architect/Engineer at all times. The Contractor will also be responsible for updating the electronic drawing files. Upon completion of the contract this set of "as-builts" and updated CAD files shall be delivered to the Architect/Engineer.
- C. In addition to the above required record drawings, maintain at all times at the project site the most current information on the following:
 - 1. Addenda
 - 2. Change orders
 - 3. Submittals
 - 4. Inspection reports
 - 5. Test results
 - 6. Outage information

3.7 DELIVERY AND STORAGE OF MATERIALS

- A. Make provisions for the delivery and safe storage of all materials, including any materials furnished by others to be installed by this Contractor. Carefully mark and store all materials. Deliver materials to the job site in stages of the work that will expedite the work as a whole. Carefully check materials furnished to this Contractor for installation, and provide a receipt acknowledging acceptance of delivery and condition of the materials received. Thereafter, assume full responsibility for its safekeeping until the final installation has been reviewed and accepted.
- B. Store materials and equipment indoors at the job site, or, if this is not possible, store on raised platforms and protect from the weather by means of waterproof covers. Use the staging area as shown on the drawings. Coverings shall permit circulation of air around materials to prevent condensation of moisture. Screen or cap openings in equipment to prevent the entry of vermin.

3.8 PROGRESS OF WORK

- A. Order progress of electrical work so as to conform to progress of work of other trades, and complete entire installation as soon as conditions permit. Assume any cost resulting from defective or ill-timed work performed under this Division. The Contractor shall be liable for all additional costs associated with increased site visits by the Engineer.

3.9 CUTTING AND PATCHING

- A. Refer to Division 01 for additional requirements. Provide all cutting, patching, channeling, core drilling, boring etc., necessary for electrical work. Locate holes to be drilled, light poles, etc., coordinate work with all other trades on the job, and make arrangements for necessary openings.

3.10 EQUIPMENT PADS

- A. The Contractor shall be responsible for providing housekeeping pads (concrete) for all grade or floor-mounted electrical equipment (i.e., pad-mounted transformers and switchgear). Concrete shall be in accordance with the concrete section of these specifications. Pads shall be at least 3-1/2 inches high (above finished grade or finished floor) and shall be 2 inches larger, in all dimensions, than the equipment that will sit thereon.

3.11 REMODEL WORK

- A. All electrical equipment in existing areas to be remodeled is to be preserved and reused unless indicated otherwise on plans.

3.12 MANUFACTURER'S INSTRUCTIONS

- A. Where the specifications call for an installation to be made in accordance with manufacturer's recommendations, a copy of such recommendations shall at all times be kept in the job superintendent's office and shall be available to the Owner's representative.
- B. Follow manufacturer's instructions where they cover points not specifically indicated on drawings and specifications. If they are in conflict with the drawings and specifications, obtain clarification from the Architect/Engineer before starting work.

3.13 OPERATING MANUAL, PARTS LIST, INDOCTRINATION OF OPERATING, AND MAINTENANCE PERSONNEL

- A. Furnish service of a qualified representative or supplier of each item or system itemized below who shall instruct specific personnel, as designated by Owner, in operation and maintenance of that item or system. Instruction shall be made when the particular system is completed and at the time as requested by Owner.
- B. Systems:
 - 1. Panelboards
 - 2. Transformers
- C. Refer to Division 01 for Operating Manuals and Instructions. Fully explain contents of such manuals as a part of indoctrination, and instruct Owner's personnel in correct procedure in obtaining service both during and after guarantee period. Operating manual and parts lists shall list complete information as to whom Owner shall contact for service and parts. Include address and phone number. Evidence shall be furnished that authorized service organization regularly carries a complete stock of repair parts for the above items or system, and that the organization is available for service. Service shall be furnished within 24 hours after request.

3.14 CLEANUP

- A. Refer to Division 01.
- B. Remove all materials, scrap, etc. relative to electrical installation, and leave premises in a clean, orderly condition. Any costs to Owner for cleanup of site will be charged to Contractor. At completion, all equipment, lighting fixtures, etc. shall be thoroughly cleaned and all residue removed from the inside and outside surfaces. Defaced finish shall be refinished.

3.15 GUARANTEE

- A. Provide in accordance with the General Requirements and Division 01. Leave entire electrical system installed under this Division in proper working order. Replace, without additional charge, any work materials or equipment provided under this Division which develops defects within one year from date of final acceptance of installation by Owner. Guarantee all materials and equipment against defects in composition, design or workmanship.
- B. Furnish to the Owner a formal warranty covering the electrical system installed under this contract, to be free from defective materials and workmanship for a period of one year after date of acceptance of installation by Owner.

3.16 SAFETY AND INDEMNITY

- A. The Contractor shall be solely and completely responsible for conditions of the job site, including safety of all persons and property during performance of the work. This requirement will apply continuously and not be limited to normal working hours. Refer also to General Requirements.
- B. No act, service, drawing review or construction review by the Owner, the Architect, the Engineers or their Consultants is intended to include review of the adequacy of the Contractor's safety measures in, on, or near the construction site.
- C. At all times during performance of this Contract, properly protect work from damage and protect the Owner's property from injury or loss. Make good any damage, injury, or loss, as may be directly due to errors in the Bidding Documents or caused by agents or employees of the Contractor.

3.17 PROJECT CLOSEOUT

- A. Operating and Acceptance Tests:
 - 1. The Contractor shall hire an independent testing agency to conduct operating and acceptance tests on new electrical system components and all existing devices that are impacted by the project.
 - 2. The Testing Agency shall prepare written reports of values of all test readings and procedures. Reports shall include all breaker settings and modifications to one line and three line drawings.
 - 3. The Testing Agency shall furnish all equipment, instruments and personnel required to conduct tests.
 - 4. Tests will be defined in the individual section describing the equipment or system.
- B. Punch Lists: Final payment will not be authorized until all items on the final punch list have been completed and routine maintenance procedure and spare parts have been received. Additional punch list completion verification visits beyond one by the Engineer shall be at the expense of the Contractor.

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- C. **Cleaning and Painting:** Clean all electrical equipment, such as switches, panelboards, luminaires, etc., of construction dirt, dust, paint smears, etc., and touch-up or repaint all scars, blemishes, rust spots, etc., to original, or approved other state of finish.
- D. **Operations and Maintenance Manuals:** Compile a complete list of product data and shop drawings, acceptance tests, warranties, certificates, and subcontractor and supplier information (i.e., name, address, phone number).
- E. **Guarantees and Warranties:** Furnish to the Owner a formal warranty covering the electrical system installed under contract, to be free from defective materials and workmanship for a period of one year after date of acceptance of installation by Owner. During this period provide all labor and new materials required to repair or replace all defects to the satisfaction of the Owner at no cost to Owner.
- F. **As-builts Drawings:** The Contractor shall provide to the Architect/Engineer a contract set of electrical drawings and CAD files, both hard copy and electronic copy with all CAD and clouded changes and deviations from the original drawings.

END OF SECTION 16010

SECTION 16050 - COMMON WORK RESULTS FOR ELECTRICAL

PART 1 – GENERAL

1.1 SUMMARY

- A. This section includes requirements for basic electrical materials and methods for the following items:
 - 1. Raceways
 - 2. Conductors and cables
 - 3. Supporting devices for electrical components
 - 4. Electrical identification
 - 5. Concrete equipment bases
 - 6. Electrical demolition
 - 7. Cutting and patching for electrical construction
 - 8. Paints and Coatings
 - 9. Adhesives and Sealants

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications, apply to this section.

1.3 REFERENCES

- A. The latest edition of the following standards and codes, standard publications of professional organizations, and the local authorities having jurisdiction are the minimum requirements for this work.
 - 1. American National Standards Institute (ANSI)
 - 2. American Society for Testing and Materials (ASTM)
 - 3. Association of Edison Illuminating Companies (AEIC)
 - 4. Code of Federal Regulations (CFR)
 - 5. Insulated Cable Engineer's Association (ICEA)
 - 6. Institute of Electrical and Electronic Engineers (IEEE)
 - 7. National Electrical Manufacturer's Association (NEMA)
 - 8. National Fire Protection Association (NFPA)
 - 9. NFPA 70, The National Electrical Code (NEC)
 - 10. Underwriters' Laboratories, Inc. (UL)
 - 11. State, City, and Local Authorities
 - 12. University of Colorado at Boulder Standards

1.4 DEFINITIONS

- A. Instructions such as "Provide" shall mean the same as though the words "This Contractor shall" preceded each such instruction. "Provide" shall mean "Furnish and Install." Where the words "Accepted" or "Acceptable" are used, such "Accepted" or "Acceptable" action by the Engineer and/or Architect denotes that the work or equipment item is in conformance with the design concept of the project and, in general, complies with pertinent information given in the Contract Documents.
- B. EMT: Electrical metallic tubing
- C. ENT: Electrical nonmetallic tubing
- D. FMC: Flexible metal conduit

- E. IMC: Intermediate metal conduit
- F. LFMC: Liquidtight flexible metal conduit
- G. LFNC: Liquidtight flexible nonmetallic conduit
- H. RMC: Rigid metallic conduit
- I. RNC: Rigid nonmetallic conduit

1.5 SUBMITTALS

- A. Product Data:
 - 1. Hangers and supports
 - 2. Electrical identification materials
 - 3. Raceways and fittings
 - 4. Conductors and Cable
 - 5. Paints and Coatings - Provide Product Data verifying Volatile Organic Compound (VOC) content is less than or equal to the allowable VOC established by Governing Standard.
 - 6. Adhesives and Sealants - Provide Product Data verifying Volatile Organic Compound (VOC) content is less than or equal to the allowable VOC established by Governing Standard.
- B. Coordination Drawings: Plans, sections, and elevations drawn to scale and coordinating installation of equipment, where required by the contract drawings or where site physical conditions limit installation capabilities.
- C. Coordinate with the Commissioning Agent for the testing of lighting controls and devices and respond to Commissioning Agent findings.

1.6 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70, the National Electrical Code.
- C. All equipment and materials will be new and unused and shall be in conformance with the current applicable industry standards. Workmanship and neat appearance shall be as important as electrical and mechanical operation. Defective or damaged materials shall be replaced or repaired prior to final acceptance in a manner meeting approval of Architect and/or Engineer and at no additional cost to the Owner.
- D. Provide documentation to Architect and Engineer that identified LEED credit impact for all product substitution.

1.7 SEQUENCING

- A. Coordinate chases, slots, inserts, sleeves, and openings with general construction work and arrange in building structure during progress of construction to facilitate the electrical installation.
- B. Sequence, coordinate, and integrate installing electrical materials and equipment for efficient flow of the Work. Coordinate installing large equipment requiring positioning before closing in the building.

- C. No work shall be concealed until after inspection and approval by proper authorities. If work is concealed without inspection and approval, Contractor shall be responsible for all work required to expose and restore the concealed work in addition to all required modifications.
- D. Where electrical identification devices are applied to field-finished surfaces, coordinate installation of identification devices with completion of finished surface.
- E. Where electrical identification markings and devices will be concealed by acoustical ceilings and similar finishes, coordinate installation of these items before ceiling installation.

PART 2 - PRODUCTS

2.1 RACEWAYS

- A. Metallic Conduit Systems:
 - 1. EMT: ANSI C80.3, zinc-coated steel. EMT shall be galvanized on the outside and coated on the inside with a hard smooth lacquer finish. EMT fittings shall be set-screw type. EMT shall comply with UL 797 and ANSI C80.3.
 - 2. FMC: Flexible metal conduit shall be galvanized steel with steel fittings and shall comply with UL 1.
 - 3. IMC: ANSI C80.6, zinc-coated steel, with threaded fittings. Intermediate steel conduit shall be hot-dipped galvanized.
 - 4. LFMC: Zinc-coated steel with sunlight-resistant and mineral-oil-resistant plastic jacket. Liquidtight Flexible Steel conduit shall comply with UL 514C. Liquid and moisture tight conduit shall be American Brass with Appleton "ST" connectors or approved equal.
 - 5. RMC: Rigid Steel Conduit shall be galvanized and shall comply with UL 6 and ANSI C80.1. Plastic-coated conduit shall be rigid galvanized steel conduit having a 0.030-inch minimum thick factory-bonded PVC jacket, using pre-jacketed couplings as manufactured by Pittsburgh Robroy, Plastic Applicator, Occidental, or approved equal.
- B. Nonmetallic Conduit Systems:
 - 1. RNC: NEMA TC 2, Schedule 40 or 80 PVC
 - 2. LFNC: UL 1660
 - 3. RNC fittings: NEMA TC3, match to conduit or conduit/tubing type and material
- C. Raceway Fittings: Specifically designed for the raceway type with which used.

2.2 CONDUCTORS AND CABLES

- A. UL-listed building wires and cables with conductor material, insulation type, cable construction, and rating as specified in Part 3 "Wire and Insulation Applications."
- B. Rubber Insulation Material: Comply with NEMA WC 3.
- C. Thermoplastic Insulation Material: Comply with NEMA WC 5.
- D. Cross-Linked Polyethylene Insulation Material: Comply with NEMA WC 7.
- E. Ethylene Propylene Rubber Insulation Material: Comply with NEMA WC 8.
- F. Conductor Material: Copper.

G. Conductors and Cables:

1. All conductors shall be new, unless otherwise noted. All conductors #8 AWG and larger shall be stranded. Conductors #10 and smaller may be solid or stranded depending on their application.
2. Secondary voltage conductors and cables shall be electrical grade, annealed copper, tinned if rubber insulated, and fabricated in accordance with ASTM and ICEA standards. The use of aluminum is prohibited except where shown on one-line or equipment schedules. Minimum size #12 for branch circuits; #14 for control wiring. Conductor types shall be as follows:
 - a. In sizes #1/0 AWG and larger: Cross-linked polyethylene insulation type XHHW (75 to 90°C) or THWN/THHN.
 - b. In sizes #1 AWG and smaller: All conductors shall have heat/moisture resistant thermoplastic insulation type THW or THWN (75°C), except as follows:
 - 1) Where conduit temperature will exceed 100°F, use type THHN (90°C). Type XHHW (90°C) permissible in dry locations.
 - 2) Motor circuit conductors: 75° THWN or XHHW from disconnect to motor.
 - 3) In 120-volt incandescent fixtures, type AF (150°C).
 - 4) In wireways of fluorescent lighting fixtures types THWN/THHN/MTW (90°C).
 - 5) Handling cord drops and cord connections: Type "SO" cord.
 - 6) Conductors in 120 volt circuits longer than 100 feet or 277 volt circuits longer than 200 feet shall not be less than #10 AWG.
 - c. All wiring for control circuits to contactors, pushbuttons, and the like, shall be #12 AWG, copper, stranded with THWN insulation.

H. Wire Connectors and Splices: Units of size, ampacity rating, material, type, and class suitable for service indicated.

2.3 SUPPORTING DEVICES FOR ELECTRICAL COMPONENTS

- A. Provide hangers and supports to support raceways, fixtures, cabinets, boxes, etc. as manufactured by B-Line, Unistrut, Binkley or Kindorf.
- B. Material: Cold-formed steel, with corrosion-resistant coating acceptable to authorities having jurisdiction.
- C. Metal Items for Use Outdoors or in Damp Locations: Steel, hot-dip galvanized after fabrication.
- D. Slotted-Steel Channel Supports: Flange edges turned toward web, and 9/16-inch-(14-mm-)diameter slotted holes at a maximum of 2 inches (50 mm) o.c., in webs.
- E. Raceway and Cable Supports: Manufactured clevis hangers, riser clamps, straps, threaded C-clamps with retainers, ceiling trapeze hangers, wall brackets, and spring-steel clamps or click-type hangers.
- F. Pipe Sleeves: ASTM A 53, Type E, Grade A, Schedule 40, galvanized steel, plain ends.
- G. Expansion Anchors: Carbon-steel wedge or sleeve type.
- H. Toggle Bolts: All-steel springhead type.

2.4 ELECTRICAL IDENTIFICATION

- A. Identification Devices: A single type of identification product for each application category. Use colors prescribed by ANSI A13.1, NFPA 70, and these Specifications.
 - 1. As a minimum, identification means shall be installed on the following:
 - a. Panelboards
 - b. Transformers
 - c. Junction boxes
 - d. Disconnects
 - e. Cables
- B. Colored Adhesive Marking Tape for Wires, and Cables: Self-adhesive vinyl tape, not less than 1 inch wide by 3 mils thick (25 mm wide by 0.08 mm thick).
- C. Color-Coding Cable Ties: Type 6/6 nylon, self-locking type. Colors to suit coding scheme.
- D. Engraved-Plastic Labels, Signs, and Instruction Plates: Engraving stock, melamine plastic laminate punched or drilled for mechanical fasteners 1/16-inch (1.6-mm) minimum thickness for signs up to 20 sq. in. (129 sq. cm) and 1/8-inch (3.2-mm) minimum thickness for larger sizes. Engraved legend in black letters on white background.
- E. Interior Warning and Caution Signs: Comply with 29 CFR, Chapter XVII, Part 1910.145. Preprinted, aluminum, baked-enamel-finish signs, punched or drilled for mechanical fasteners, with colors, legend, and size appropriate to the application.
- F. Fasteners for Nameplates and Signs: Self-tapping, stainless-steel screws or No. 10/32 stainless-steel machine screws with nuts and flat and lock washers.

2.5 CONCRETE EQUIPMENT BASES

- A. Concrete: 3000-psi (20.7-MPa), 28-day compressive strength."

2.6 PAINTS AND COATINGS

- A. Paints and Coatings applied on site within the weather proofing exterior must comply with the Green Seal Standard GS-11, Green Seal Standard GC-03, or South Coast Air Quality Management District Rule 1113. Refer to Specification 01352 for specific VOC requirements.
- B. Equipment: Equipment manufacturer's paint selected to match installed equipment finish.
- C. Galvanized Surfaces: Zinc-rich paint recommended by item manufacturer.

2.7 ADHESIVES AND SEALANTS

- A. Adhesives and Sealants applied on site within weather proof exterior must comply with South Coast Air Quality Management District Rule or Green Seal Standard GS-36. Refer to specific VOC requirements in Specification 01352.

PART 3 - EXECUTION

3.1 ELECTRICAL EQUIPMENT INSTALLATION

- A. Headroom Maintenance: If mounting heights or other location criteria are not indicated, arrange and install components and equipment to provide the maximum possible headroom.
- B. Materials and Components: Install level, plumb, and parallel and perpendicular to other building systems and components, unless otherwise indicated.
- C. Equipment: Install to facilitate service, maintenance, and repair or replacement of components. Adhere to clearances required by the NEC, NFPA 70. Connect for ease of disconnecting, with minimum interference with other installations.
- D. Right of Way: Give to raceways and piping systems installed at a required slope.

3.2 RACEWAY APPLICATION

- A. Use the following raceways for outdoor installations:
 - 1. Exposed: IMC
 - 2. Concealed: IMC
 - 3. Underground, Single Run: RNC
 - 4. Underground, Grouped: RNC
 - 5. Connection to Vibrating Equipment: LFMC
 - 6. Boxes and Enclosures: NEMA 250, Type 3R or Type 4
- B. Use the following raceways for indoor installations:
 - 1. Exposed: EMT
 - 2. Concealed: EMT
 - 3. Connection to Vibrating Equipment: FMC; except in wet or damp locations, use LFMC
 - 4. Damp or Wet Locations: IMC
 - 5. Embedded in concrete: IMC or RMC
 - 6. Boxes and Enclosures: NEMA 250, Type 1, unless otherwise indicated
 - 7. Damp or wet locations: NEMA 250, Type 4, nonmetallic

3.3 RACEWAY INSTALLATION

- A. Conceal raceways, unless otherwise indicated, within finished walls, ceilings, and floors.
- B. Install raceways at least 6 inches (150 mm) away from parallel runs of flues and steam or hot-water pipes. Locate horizontal raceway runs above water and steam piping.
- C. Use temporary raceway caps to prevent foreign matter from entering.
- D. Stub-up Connections: Extend conduits through concrete floor for connection to freestanding equipment. Install with an adjustable top or coupling threaded inside for plugs set flush with the finished floor. Extend conductors to equipment with rigid steel conduit; FMC may be used 6 inches (150 mm) above the floor. Install screwdriver-operated, threaded flush plugs flush with floor for future equipment connections. Arrange so that curved portion of bends is not visible above the finished slab.
- E. Install raceways embedded in slabs in middle third of slab thickness where practical, and leave at least 1-inch (25-mm) concrete cover.
 - 1. Secure raceways to reinforcing rods to prevent sagging or shifting during concrete placement.

2. Space raceways laterally to prevent voids in concrete.
 3. Install conduit larger than 1-inch trade size (DN27) parallel to or at right angles to main reinforcement. Where conduit is at right angles to reinforcement, place conduit close to slab support.
 4. Transition from nonmetallic tubing to Schedule 80 nonmetallic conduit, rigid steel conduit, or IMC before rising above floor.
 5. Make bends in exposed parallel or banked runs from same centerline to make bends parallel. Use factory elbows only where elbows can be installed parallel; otherwise, provide field bends for exposed parallel raceways.
- F. Make conduit bends and offsets so ID is not reduced. Keep legs of bends in the same plane and straight legs of offsets parallel, unless otherwise indicated.
- G. Use raceway fittings compatible with raceways and cables and suitable for use and location.
- H. Install pull wires in empty raceways. Use No. 14 AWG zinc-coated steel or monofilament plastic line with not less than 200-lb. (90-kg) tensile strength. Leave at least 12 inches (300 mm) of slack at each end of the pull wire.
- I. Install telephone and signal system raceways, 2-inch trade size (DN53) and smaller, in maximum lengths of 150 feet (45 m) and with a maximum of two 90-degree bends or equivalent. Separate lengths with pull or junction boxes where necessary to comply with these requirements, in addition to requirements above.
- J. Connect motors and equipment subject to vibration, noise transmission, or movement with a maximum of 72-inch (1830-mm) flexible conduit. Install LFMC in wet or damp locations. Install separate ground conductor across flexible connections.
- K. Set floor boxes level and trim after installation to fit flush to finished floor surface.
- 3.4 WIRING METHODS FOR POWER, LIGHTING, AND CONTROL CIRCUITS
- A. Feeders: Type THHN/THWN insulated conductors in raceway.
 - B. Branch Circuits: Type THHN/THWN insulated conductors in raceway.
 - C. Remote-Control Signaling and Power-Limited Circuits: Type THHN/THWN insulated conductors in raceway for Classes 1, 2, and 3, unless otherwise indicated.
- 3.5 WIRING INSTALLATION
- A. Install splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.
- 3.6 ELECTRICAL SUPPORTING DEVICE APPLICATION
- A. Damp Locations and Outdoors: Hot-dip galvanized materials or nonmetallic, U-channel system components.
 - B. Dry Locations: Steel materials
 - C. Support Clamps for PVC Raceways: Click-type clamp system
 - D. Selection of Supports: Comply with manufacturer's written instructions.

- E. Strength of Supports: Adequate to carry present and future loads, times a safety factor of at least four; minimum of 200-lb. design load.

3.7 SUPPORT INSTALLATION

- A. Install support devices to securely and permanently fasten and support electrical components.
- B. Install individual and multiple raceway hangers and riser clamps to support raceways. Provide U-bolts, clamps, attachments, and other hardware necessary for hanger assemblies and for securing hanger rods and conduits.
- C. Support parallel runs of horizontal raceways together on trapeze- or bracket-type hangers.
- D. Size supports for multiple raceway installations so capacity can be increased by a 25 percent minimum in the future.
- E. Support individual horizontal raceways with separate, malleable-iron pipe hangers or clamps.
- F. Install 1/4-inch-(6-mm-) diameter or larger threaded steel hanger rods, unless otherwise indicated.
- G. Spring-steel fasteners specifically designed for supporting single conduits or tubing may be used instead of malleable-iron hangers for 1-1/2-inch (38-mm) and smaller raceways serving lighting and receptacle branch circuits above suspended ceilings and for fastening raceways to slotted channel and angle supports.
- H. Arrange supports in vertical runs so the weight of raceways and enclosed conductors is carried entirely by raceway supports, with no weight load on raceway terminals.
- I. Simultaneously install vertical conductor supports with conductors.
- J. Separately support cast boxes that are threaded to raceways and used for fixture support. Support sheet-metal boxes directly from the building structure or by bar hangers. If bar hangers are used, attach bar to raceways on opposite sides of the box and support the raceway with an approved fastener not more than 24 inches (610 mm) inches from the box.
- K. Install metal channel racks for mounting cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices unless components are mounted directly to structural elements of adequate strength.
- L. Install sleeves for cable and raceway penetrations of concrete slabs and walls unless core-drilled holes are used. Install sleeves for cable and raceway penetrations of masonry and fire-rated gypsum walls and of all other fire-rated floor and wall assemblies. Install sleeves during erection of concrete and masonry walls.
- M. Securely fasten electrical items and their supports to the building structure, unless otherwise indicated. Perform fastening according to the following unless other fastening methods are indicated:
 1. Wood: Fasten with wood screws or screw-type nails.
 2. Masonry: Toggle bolts on hollow masonry units and expansion bolts on solid masonry units.
 3. New Concrete: Concrete inserts with machine screws and bolts.
 4. Existing Concrete: Expansion bolts.
 5. Threaded studs driven by a powder charge and provided with lock washers in existing concrete are not allowed unless approved by Architect.
 6. Steel: Welded threaded studs or spring-tension clamps on steel. Field welding shall comply with AWS D1.1.

7. Welding to steel structure may be used only for threaded studs, not for conduits, pipe straps, or other items.
8. Light Steel: Sheet-metal screws.
9. Fasteners: Select so the load applied to each fastener does not exceed 25 percent of its proof-test load.

3.8 IDENTIFICATION MATERIALS AND DEVICES

- A. All components of electrical system shall be neatly and accurately labeled to facilitate ready identification and service. Temporary type of markings, which are visible on equipment, will not be permitted. Repaint trims, housing, etc. where such markings cannot be readily removed. Defaced finish must be refinished. Provide labels as follows (or indicated elsewhere):
 1. Provide engraved composition nameplates having 3/8 inch minimum height, white letters engraved in a black face for each switch or circuit breaker in switchboards and subdistribution boards. Provide labeling of matching style designating all units as designated on drawings. Secure all lamenoid nameplates with rivets or screws. Adhesives will not be allowed.
 2. Use of Dymolabels for panels and circuit number identification on all disconnect switches in mechanical and equipment rooms is forbidden.
 3. Provide engraved composition nameplates on all disconnect switches. Lettering shall be 3/8 inches minimum height for equipment. Labeling for equipment shall be in accordance with designations given on the associated drawings.
- B. Coordinate names, abbreviations, colors, and other designations used for electrical identification with corresponding designations indicated in the Contract Documents or required by codes and standards. Install at locations for most convenient viewing without interference with operation and maintenance of equipment. Use consistent designations throughout Project.
 1. Bands: Pretensioned, snap-around, colored plastic sleeves or colored adhesive marking tape. Make each color band **2 inches (51 mm)** wide, completely encircling conduit, and place adjacent bands of two-color markings in contact, side by side.
 2. Band Locations: At changes in direction, at penetrations of walls and floors, at **50-foot (15-m)** maximum intervals in straight runs, and at **25-foot (8-m)** maximum intervals in congested areas.
 3. Colors:
 - a. Fire Alarm System: Red
 - b. Security System: Blue and yellow
 - c. Telecommunication System: Green and yellow
- C. Tag and label each feeder conductor (having an operating voltage of 600 volts or less) in pullboxes with an engraved, non-metallic tag, having 3/16-inch minimum height letters. Tag shall be a minimum of one inch diameter or square. State circuit number and phase (A, B, C).
- D. Color-code 208/120V system secondary service, feeder, and branch-circuit conductors throughout the secondary electrical system as follows:
 1. Phase A: Black
 2. Phase B: Red
 3. Phase C: Blue
 4. Neutral: White
 5. Ground: Green
- E. Color-code 480/277V system secondary service, feeder, and branch-circuit conductors throughout the secondary electrical system as follows:
 1. Phase A: Brown
 2. Phase B: Orange
 3. Phase C: Yellow

- 4. Neutral: White with a colored stripe or gray
- 5. Ground: Green

F. Install warning, caution, and instruction signs where required to comply with 29 CFR, Chapter XVII, Part 1910.145, and where needed to ensure safe operation and maintenance of electrical systems and of items to which they connect. Install engraved plastic-laminated instruction signs with approved legend where instructions are needed for system or equipment operation. Install metal-backed butyrate signs for outdoor items.

3.9 FIRESTOPPING

A. Apply firestopping to cable and raceway penetrations of fire-rated floor and wall assemblies to achieve fire-resistance rating of the assembly. Firestopping materials and installation requirements are specified in Division 7.

3.10 CONCRETE BASES

A. Construct concrete bases of dimensions indicated, but not less than **4 inches (100 mm)** larger, in both directions, than supported unit. Follow supported equipment manufacturer's anchorage recommendations and setting templates for anchor-bolt and tie locations, unless otherwise indicated.

3.11 DEMOLITION

A. Protect existing electrical equipment and installations indicated to remain. If damaged or disturbed in the course of the Work, remove damaged portions and install new products of equal capacity, quality, and functionality.

B. Accessible Work: Remove exposed electrical equipment and installations, indicated to be demolished, in their entirety.

C. Abandoned Work: Cut and remove buried raceway and wiring, indicated to be abandoned in place, **2 inches (50 mm)** below the surface of adjacent construction. Cap raceways and patch surface to match existing finish.

D. Remove demolished material from Project site. Coordinate with Owner for any materials to be salvaged.

E. Remove, store, clean, reinstall, reconnect, and make operational components indicated for relocation.

3.12 CUTTING AND PATCHING

A. Cut, channel, chase, and drill floors, walls, partitions, ceilings, and other surfaces required to permit electrical installations. Perform cutting by skilled mechanics of trades involved.

B. Repair and refinish disturbed finish materials and other surfaces to match adjacent undisturbed surfaces. Install new fireproofing where existing firestopping has been disturbed. Repair and refinish materials and other surfaces by skilled mechanics of trades involved.

3.13 FIELD QUALITY CONTROL

A. Inspect installed components for damage and faulty work, including the following:
1. Raceways

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2. Conductors and cables
3. Supporting devices for electrical components
4. Electrical identification
5. Concrete equipment bases
6. Electrical demolition
7. Cutting and patching for electrical construction
8. Touch-up painting

3.14 REFINISHING AND TOUCH-UP PAINTING

- A. Refinish and touch-up paint as required..
 1. Clean damaged and disturbed areas and apply primer, intermediate, and finish coats to suit the degree of damage at each location.
 2. Follow paint manufacturer's written instructions for surface preparation and for timing and application of successive coats.
 3. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
 4. Repair damage to PVC or paint finishes with matching touch-up coating recommended by manufacturer.

3.15 CLEANING AND PROTECTION

- A. On completion of installation, including outlets, fittings, and devices, inspect exposed finish. Remove burrs, dirt, paint spots, and construction debris.
- B. Protect equipment and installations and maintain conditions to ensure that coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.
- C. Manage indoor air quality in accordance with provisions of Section 01352.

END OF SECTION 16050

SECTION 16440 – DISCONNECT SWITCHES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: This section includes requirements for individually mounted and enclosed fused and non-fused disconnect switches, and fuses, for disconnecting and protecting feeders, branch circuits, and utilization equipment.

1.2 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specifications, apply to this section.

1.3 REFERENCES

- A. The latest edition of the following standards and codes, standard publications of professional organizations, and the local authorities having jurisdiction are the minimum requirements for this work.
 - 1. American National Standards Institute (ANSI)
 - 2. Institute of Electrical and Electronic Engineers (IEEE)
 - 3. National Electrical Manufacturer's Association (NEMA)
 - 4. National Fire Protection Association (NFPA)
 - 5. NFPA 70, the National Electrical Code (NEC)
 - 6. Underwriters Laboratories, Inc. (UL)
 - 7. State, city, and local authorities
 - 8. University of Colorado at Boulder Standards

1.4 DEFINITIONS

- A. FDS: Fused Disconnect Switch
- B. NFDS: Non-fused Disconnect Switch
- C. RMS: Root Mean Square
- D. SPDT: Single-pole Double-throw

1.5 SUBMITTALS

A. General:

1. Submit each item in this Article according to the Conditions of the Contract and Division 1 Specifications.
2. All exceptions to this specification shall be given in written format referencing the section and paragraph and stating the proposed alternative to the requirement.
3. The information continued in the submittal shall be complete in every respect, as partial submittals shall be cause for rejection.

B. Product data for disconnect switches, circuit breakers, and accessories specified in this section as follows:

1. Descriptive data and ratings for voltage, continuous current, maximum horsepower, and short-circuit rating
2. Dimensional plans, elevations, sections, and details
3. NEMA enclosure type and size
4. Cable terminal size, number, and material
5. Accessories device descriptive bulletins and product data sheets (i.e. shunt trip coil, undervoltage release, ground fault, auxiliary contacts, key interlocks, etc.)

1.6 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70, the National Electrical Code.
- C. All equipment and materials will be new and unused and shall conform with the current applicable industry standards. Workmanship and neat appearance shall be as important as electrical and mechanical operation. Defective or damaged materials shall be replaced or repaired prior to final acceptance in a manner meeting approval of Architect and/or Engineer and at no additional cost to the Owner.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Disconnect Switches: Acceptable manufacturers are listed below. All disconnect switches shall be of the same manufacturer.
 1. Cutler-Hammer
 2. General Electric Company
 3. Square D Company

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- B. Fuses: Acceptable manufacturers are listed below. All fuses shall be of the same manufacturer.
 - 1. Cooper Bussman, Inc.
 - 2. Ferraz Shawmut, Inc.
 - 3. Tracor, Inc.; Littelfuse, Inc. Subsidiary

2.2 DISCONNECT SWITCHES

- A. Enclosed fusible and non-fusible switches, 1200-amp and smaller, NEMA KS1, heavy duty type with lockable handle, 600-volts, horsepower rated for motors as required. Number of poles and ampacity as noted or required by Code. Short-circuit rating shall be sufficient to withstand the available fault current or let-through current before the fuse melts without damage or change in rating.
- B. Fusible switches 30- through 600-amperes shall be furnished with rejection class "R" or "J" type fuse clips and 800 through 1200 amperes shall be furnished with class "L" type fuse clips.
- C. Switches shall incorporate a safety cover interlock to prevent opening the cover with the switch in the "ON" position or prevent placing the switch in the "ON" position with the cover open. Provide a "defeater" for authorized personnel.
- D. Handles shall have provisions for padlocking and shall clearly indicate the ON and OFF positions. Front cover doors shall be padlockable in the closed position.

2.3 FUSES

- A. Fuses shall be Class K-1 and K-5 of rejection type for 600 amperes and below and Class L for over 600 amperes. Fuse voltage class shall be either 250 volt or 600 volt and shall be applied according to circuit voltage.
- B. Coordinate the low-voltage fuses required for the project to provide basic selective protection and properly coordinate with the other associated protective equipment.

Lugs: Mechanical style suitable for number, size, and material of conductors.

- 2. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HACR for heating, air-conditioning, and refrigerating equipment.
- 3. Auxiliary Switch: Two SPDT switches with "a" and "b" contacts; "a" contacts mimic circuit-breaker contacts, "b" contacts operate in reverse of circuit-breaker contacts.
- 4. Key Interlock Kit: Externally mounted to prohibit circuit-breaker operation; key shall be removable only when circuit breaker is in off position.
- 5. Zone-selective Interlocking: Integral with electronic trip unit; for interlocking ground-fault protection function.

2.4 ENCLOSURE

- A. NEMA AB 1 and NEMA KS 1 to meet environmental conditions of installed location.
 - 1. Outdoor Locations: NEMA 250, Type 3R

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2. Other Wet or Damp Indoor Locations: NEMA 250, Type 4

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install devices in general area of equipment and accessible to maintenance personnel according to manufacturer's written instructions. Secure devices firmly to supporting structure with approved fasteners in a level and plumb manner. Verify voltage and amperage size and enclosure type of devices for each installation. Where practical, devices shall be mounted such that the top of switch is a maximum of 6'-0" above finished floor or surface.
- B. Connect devices to wiring system and to ground as indicated and instructed by manufacturer. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. Where manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.
- C. Install fuses in fusible devices. Arrange fuses so rating information is readable without removing fuse. Install labels indicating fuse replacement information on inside door of each fused switch.
- D. Identify each device according to requirements in other sections of these specifications.

3.2 OVERCURRENT PROTECTIVE DEVICES

- A. Install fuses where required as a protective device in conformance with equipment manufacturer's specified requirements and in accordance with the requirements of this section.

3.3 EQUIPMENT CONNECTIONS

- A. Provide all final power connections for mechanical equipment. All equipment items will be furnished and set by others. Confirm with suppliers all rough-in data, e.g., electrical characteristics, dimensions, locations, type of connection, etc., prior to installation.

3.4 FIELD QUALITY CONTROL

- A. Prepare for acceptance tests as follows:
 - 1. Test insulation resistance for each enclosed switch, circuit breaker, component, and control circuit.
 - 2. Test continuity of each line- and load-side circuit.

- B. Testing: After installing enclosed switches and circuit breakers and after electrical circuitry has been energized, demonstrate product capability and compliance with requirements.
 - 1. Procedures: Perform each visual and mechanical inspection and electrical test indicated in NETA ATS, Section 7.5 for switches. Certify compliance with test parameters.
 - 2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

3.5 CLEANING

- A. On completion of installation, inspect interior and exterior of enclosures. Remove paint and plaster splatters and other spots. Vacuum dirt and debris; do not use compressed air to assist in cleaning. Repair exposed surfaces to match original finish.

END OF SECTION 16440

SECTION 164500 – SECONDARY GROUNDING

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specifications, apply to this Section.

1.2 SUMMARY

- A. This Section includes grounding of electrical systems and equipment and basic requirements for grounding for protection of life, equipment, circuits, and systems. Grounding requirements specified in this Section may be supplemented in other Sections of these Specifications.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 16, Section “Basic Electrical Requirements”
 - 2. Division 16, Section “Common Work Results for Electrical”
 - 3. Division 16, Section “DryType Transformer”

1.3 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract, Division 01 Specifications, Section 01300 and Division 16, Section 16010.
- B. Product Data for grounding rods, connectors and connection materials, and grounding fittings.
- C. Qualification data for firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of Architect/Engineers and Owners, and other information specified.
- D. Field tests and observation reports certified by the testing organization and indicating and interpreting the test reports for compliance with performance requirements.

1.4 QUALITY ASSURANCE

- A. Testing Agency Qualifications: A "Nationally Recognized Testing Laboratory" (NRTL) as defined in OSHA Regulation 1910.7, or a full member company of the InterNational Electrical Testing Association (NETA).
 - 1. Testing Agency Field Supervision: Use persons currently certified by NETA or the National Institute for Certification in Engineering Technologies to supervise on-site testing specified in Part 3.
- B. Comply with latest edition of the National Electrical Code (NFPA 70).
- C. Comply with UL 467.
- D. Listing and Labeling: Provide products specified in this Section that are listed and labeled.
 - 1. The Terms "Listed" and "Labeled": As defined in the National Electrical Code, Article 100.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
1. Apache Grounding; Nashville Wire Products
 2. Boggs: H. L. Boggs & Co.
 3. Chance: A. B. Chance Co.
 4. Dossert Corp.
 5. Erico Inc.; Electrical Products Group
 6. Galvan Industries, Inc.
 7. Ideal Industries, Inc.
 8. ILSCO
 9. Kearney
 10. Korns: C. C. Korns Co.
 11. Lyncole XIT Grounding
 12. O-Z/Gedney Co.
 13. Raco, Inc.
 14. Salisbury: W.H. Salisbury & Co., Utility
 15. Thomas & Betts, Electrical
 16. Utilco Co.

2.2 GROUNDING AND BONDING PRODUCTS

- A. Governing Requirements: Where types, sizes, ratings, and quantities indicated are in excess of National Electrical Code (NEC) requirements, the more stringent requirements and the greater size, rating, and quantity indications govern.

2.3 WIRE AND CABLE GROUNDING CONDUCTORS

- A. Comply with Division 16, Section "Wires and Cables." Conform to NEC Table 8, except as otherwise indicated, for conductor properties, including stranding.
1. Material: Use only copper wire for both insulated and bare grounding conductors in direct contact with earth, concrete, masonry, crushed stone, and similar materials.
- B. Equipment Grounding Conductors: Insulated with green color insulation or bare copper.
- C. Grounding-Electrode Conductors: Stranded cable.
- D. Bare Copper Conductors: Conform to the following:
1. Solid Conductors: ASTM B 3.
 2. Assembly of Stranded Conductors: ASTM B 8.
 3. Tinned Conductors: ASTM B 33.

2.4 MISCELLANEOUS CONDUCTORS

- A. Grounding Bus: Bare, annealed-copper bars of rectangular cross section, ampacity as required by NEC.
- B. Braided Bonding Jumpers: Copper tape, braided No. 30 AWG bare copper wire, terminated with copper ferrules.
- C. Bonding Straps: Soft copper, 0.05 inch (1 mm) thick and 2 inches (50 mm) wide, except as indicated.

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- D. Ground Rods: Copper encased steel, 3/4" diameter, minimum length 10 feet.

2.5 CONNECTOR PRODUCTS

- A. Pressure Connectors: High-conductivity-plated units.
- B. Bolted Clamps: Heavy-duty type.
- C. Exothermic-Welded Connections: Provided in kit form and selected per manufacturer's written instructions for specific types, sizes, and combinations of conductors and connected items.

PART 3 – EXECUTION

3.1 APPLICATION

- A. Equipment Grounding Conductors: Comply with NEC Article 250 for types, sizes, and quantities of equipment grounding conductors, except where specific types, larger sizes, or more conductors than required by NEC are indicated.
 - 1. Provide a separate full sized equipment grounding conductor in all conduits regardless of raceway type. Terminate each end on a grounding lug, bus or bushing.
 - 2. Isolated Grounding-Receptacle Circuits: Install a separate insulated equipment grounding conductor connected to the receptacle grounding terminal. Isolate grounding conductor from raceway and from panelboard grounding terminals. Terminate at the equipment grounding-conductor terminal of the applicable derived system or service, except as otherwise indicated.
- B. Separately Derived Systems: Where NEC requires grounding, ground according to NEC Paragraph 250-26.

3.2 INSTALLATION

- A. General: Ground electrical systems and equipment according to NEC requirements, except where Drawings or Specifications exceed NEC requirements.
- B. Grounding Rods: Locate a minimum of 1-rod length from each other and at least the same distance from any other grounding electrode.
 - 1. Drive until tops are 2 inches (50 mm) below finished floor or final grade, except as otherwise indicated.
 - 2. Interconnect with grounding-electrode conductors. Use exothermic welds, except at test wells and as otherwise indicated. Make these connections without damaging copper coating or exposing steel.
- C. Grounding Conductors: Route along the shortest and straightest paths possible, except as otherwise indicated. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

3.3 CONNECTIONS

- A. General: Make connections so possibility of galvanic action or electrolysis is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.
 - 1. Use electroplated or hot-tin-coated materials to assure high conductivity and to make contact points closer in order of galvanic series.
 - 2. Make connections with clean, bare metal at points of contact.

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- B. Exothermic-Welded Connections: Use for connections to structural steel and for underground connections, except those at test wells. Comply with manufacturer's written instructions. Welds that are puffed up or that show convex surfaces indicating improper cleaning are not acceptable.
- C. Equipment Grounding-Wire Terminations: For No. 8 AWG and larger, use pressure-type grounding lugs. No. 10 AWG and smaller grounding conductors may be terminated with winged pressure-type connectors.
- D. Connections at Test Wells: Use compression-type connectors on conductors and make bolted- and clamped-type connections between conductors and grounding rods.
- E. Tighten screws and bolts for grounding and bonding connectors and terminals according to manufacturer's published torque-tightening values. Where these requirements are not available, use those specified in UL 486A and UL 486B.
- F. Compression-Type Connections: Use hydraulic compression tools to provide correct circumferential pressure for compression connectors. Use tools and dies recommended by manufacturer of connectors. Provide embossing die code or other standard method to make a visible indication that a connector has been adequately compressed on grounding conductor.
- G. Moisture Protection: Where insulated grounding conductors are connected to grounding rods or grounding buses, insulate entire area of connection and seal against moisture penetration of insulation and cable.

3.4 FIELD QUALITY CONTROL

- A. Independent Testing Agency: Provide services of an independent electrical testing agency according to the requirements of Division 01, Section "Quality Control Services" to perform tests on installations made under this Section.
- B. Testing Witness: Ground resistance testing shall be performed by an independent testing agency in the presence of a representative of the Department of Facilities Management. Provide at least two (2) weeks notice prior to testing.
- C. Tests: Subject the completed grounding system to a megger test at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal, and at ground test wells. Measure ground resistance not less than 2 full days after the last trace of precipitation, and without the soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance. Perform tests by the 2-point method according to IEEE 81.
- D. Maximum grounding resistance values are as follows:
 - 1. Equipment Rated 500 kVA and Less: 10 ohms
 - 2. Equipment Rated 500 to 1000 kVA: 5 ohms
 - 3. Equipment Rated More than 1000 kVA: 3 ohms
- E. Excessive Ground Resistance: Where resistance to ground exceeds specified values, notify Owner promptly and include recommendations to reduce ground resistance and to accomplish recommended work.

- F. Report: Prepare test reports of ground resistance at each test location. Include observations of weather and other phenomena that may affect test results. Describe measures taken to improve test results.

END OF SECTION 16450

SECTION 16461 – DRY-TYPE TRANSFORMERS (600 VOLT AND LESS)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this section.

1.2 SUMMARY

- A. This Section includes dry-type distribution and specialty transformers rated 600-volt and less.
- B. Related Documents: Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- C. Related Sections:
 - 1. Division 1 Section "Administrative Requirements"
 - 2. Division 1 Section "Commissioning"
 - 3. Division 16 Section "Basic Electrical Requirements"
 - 4. Division 16 Section "Secondary Grounding"
 - 5. Division 16 Section "Testing"

1.3 REFERENCES

- A. Equipment, methods, materials and procedures applicable to low voltage transformers shall be governed by the latest edition of the following standards or publications:

NFPA 70: National Electric Code, National Fire Protection Association
NEMA ST 20: Dry-Type Transformers for General Applications, National Electrical Manufacturers Association
UL 1561: Dry-Type General Purpose and Power Transformers, Underwriters Laboratory, Inc.

1.4 SUBMITTALS

- A. Require submittals under the provisions of Sections 16010 "Basic Electrical Requirements" and Section 01300 "Submittals."
- B. Shop Drawings: Provide shop drawings for each different model transformer in accordance with Division 1. Shop drawings shall consist of the following:
 - 1. Dimensional plan and elevation views. Show dimensions of base with anchoring recommendations.
 - 2. Conduit entrance locations and dimensions
 - 3. Incoming and outgoing conductor terminator positions
 - 4. Wiring terminal lug locations, and all other terminal lug locations, number and size of wire per lug.
 - 5. Neutral, ground bus connections
 - 6. Weight of equipment
 - 7. Minimum clearances
 - 8. Wiring Diagrams: Detail wiring and identify terminals for tap changing and connecting field-installed wiring.
- C. Product Data: Provide data sheets for each different model transformer in accordance with Division 1.
 - 1. Product data shall include the following:
 - Complete nameplate data including:

- a. kVA
 - b. Primary and secondary voltage
 - c. Primary and secondary ampere rating at all tap connections.
 - d. Insulation class and winding temperature rise.
 - e. Impedance percent.
 - f. Connection diagram showing tap configuration.
 - g. Manufacturers Model Number
 2. Model performance data including losses and efficiency at 25, 50, 75, and 100 percent rated load; sound level; and aluminum or copper winding material.
 3. Loss data.
 4. Certification of UL listing and compliance with NEMA standards.
- D. Product Certificates: Signed by manufacturers of transformers certifying that the products furnished comply with requirements.
- E. Qualification Data: For firms and persons specified in "Quality Assurance" Article.
- F. Factory Test Reports: Certified copies of manufacturer's design and routine factory tests required by referenced standards.
- G. Sound-Level Test Reports: Certified copies of manufacturer's sound-level tests applicable to equipment for this Project.
- H. Field Test Reports: Indicate and interpret test results for tests specified in Part 3.
- I. Maintenance Data: For transformers to include in the maintenance manuals specified in Division 1.

1.5 QUALITY ASSURANCE

- A. Testing Agency Qualifications: In addition to requirements specified in Division 1 Section "Quality Control," an independent testing agency shall meet OSHA criteria for accreditation of testing laboratories, Title 29, Part 1907; or shall be a full-member company of the International Electrical Testing Association.
1. Testing Agency's Field Supervisor: Person currently certified by the International Electrical Testing Association or the National Institute for Certification in Engineering Technologies, to supervise on-site testing specified in Part 3.
- B. Listing and Labeling: Provide transformers specified in this Section that are listed and labeled.
1. The Terms "Listed" and "Labeled": As defined in NFPA 70, Article 100.
 2. Listing and Labeling Agency Qualifications: A "Nationally Recognized Testing Laboratory" as defined in OSHA Regulation 1910.7.
- C. Comply with IEEE C2.
- D. Comply with NFPA 70.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store and protect products under provisions of Division 1 and in accordance with manufacturer's instructions.
- B. Store in a warm, dry location with uniform temperature. Cover ventilating openings to keep out dust.
- C. Handle transformers using only lifting eyes and brackets provided for that purpose. Protect Units against entrance of rain, sleet, or snow if handled in inclement weather.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide transformers by one the following:
 1. Cutler-Hammer/Eaton Corp.
 2. Hevi-Duty Electric.
 3. Square D; Groupe Schneider.
 4. General Electric.

2.2 TRANSFORMERS, GENERAL

- A. Description: Factory-assembled and -tested, air-cooled quiet-type units of types specified, designed for 60-Hz service. Transformers shall be of the size, rating, and mounting configurations as shown on the drawings. Unless otherwise specified, the design, manufacture, and testing of dry-type transformers and the methods of conducting tests and preparing reports shall be in accordance with ANSI, IEEE, and NEMA Standards. Required performance shall be obtained without exceeding the above indicated temperature rise in a 40°C maximum ambient, with a 30°C average over 24 hours. The terminal compartment temperature shall not exceed 75°C when the transformer is operating continuously at rated load with an ambient temperature of 40°C. Transformers shall be provided with factory installed ground lug. Provide lifting eyes on brackets. Lift and label as complying with UL 1561.
- B. Cores: Grain-oriented, non-aging silicon steel with high magnetic permeability and low hysteresis and eddy current losses, one leg per phase.
- C. Coils: Continuous aluminum windings without splices, except for taps. One coil per phase in primary and secondary.
- D. Internal Coil Connections: Brazed or welded.
- E. Enclosure:
 1. Class complies with NEMA 250 for the environment in which installed.
 - a. Indoor ventilated, NEMA 250, Type 2.
 2. The enclosure shall be made of heavy gauge steel and shall be finished utilizing a continuous process of degreasing, cleaning, and phosphatizing, followed by electrostatic deposition of a polymer polyester powder coating and baking. The coating color shall be ANSI 61. The enclosure shall have lifting holes. All ventilation openings shall be protected against falling dirt.
- F. Low-Sound-Level Units: Maximum transformer sound level shall be as follows.

<u>kVa</u> <u>Rating</u>	<u>Sound</u> <u>Level</u>
0 – 9	40 dB
10 – 50	45 dB
51 – 150	50 dB
151 – 300	55 dB
301 – 500	60 dB

- G. Insulation Class: 185°C class for transformers smaller than 15 kVA; 220°C class for transformers 15 kVA and larger. All insulation materials shall be flame-retardant and shall not support combustion as defined in ASTM Standard Test Method D635.

1. Rated Temperature Rise: 80°C maximum rise above 40°C, for 220°C class insulation; 80°C maximum rise for 185°C class insulation. Maximum hot spot temperature of 30°C.
- H. Taps: For transformers 3 kVA and larger, full-capacity taps in high-voltage windings are as follows:
 1. Taps, 3 to 15 kVA: Two 5-percent taps below rated high voltage, full capacity taps on primary windings.
 2. Taps, 15 to 500 kVA: Six 2.5-percent taps, 2 above and 4 below rated high voltage, full capacity taps on primary windings.
- I. Vibration Isolation: Transformer winding assemblies shall be isolated from housing by vibration isolation mounts.
- J. Transformer Terminations: Terminations shall be suitable for landing copper conductors without any special preparation.
- K. Transformer cooling fans shall not be permitted.
- L. Transformers shall meet NEMA TP-1 efficiency requirements. Transformer efficiency shall be at least 98.9%.

2.3 FINISHES

- A. Indoor Units: Manufacturer's standard paint over corrosion-resistant pretreatment and primer.

2.4 SOURCE QUALITY CONTROL

- A. Factory Tests: Design and routine tests comply with referenced standards.
- B. Factory Sound-Level Tests: Conduct sound-level tests on equipment for this Project if specified sound levels are below standard ratings.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Comply with safety requirements of IEEE C2.
- B. Arrange equipment to provide adequate spacing for access and for circulation of cooling air. Clearance from walls or other equipment shall be per manufacturer's recommendations, but not less than 6 inches.
- C. Identify transformers and install warning signs according to Division 16 Section "Electrical Identification."
- D. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.
- E. Transformers 75 kVA and less may be suspended or wall mounted and should be suitable for that possibility. Transformers over 75 kVA shall be floor mounted. Provide manufacturer's standard vibration isolations pads for all transformers, along with rubber washers for all mounting bolts. Where wall-mounted, provide factory mounting brackets. Where floor-mounted, install on 4-inch thick concrete pad.

- F. Conduit connections to transformers shall be made with flexible metal conduit, not less than 24 inches or more than 36 inches in length.

3.2 GROUNDING

- A. Separately Derived Systems: Make grounding connections to grounding electrodes and bonding connections to metallic piping as indicated and to comply with NFPA 70.
- B. Comply with Division 16 Section "Grounding and Bonding" for materials and installation requirements.

3.3 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to supervise the field assembly and connection of components, and the testing and adjusting of transformer components and accessories.
- B. Testing Agency: Engage a qualified independent testing agency to perform field quality-control testing.
- C. Test Objectives: To ensure transformer is operational within industry and manufacturer's tolerances, is installed according to the Contract Documents, and is suitable for energizing.
- D. Test Labeling: On satisfactory completion of tests for each transformer, attach a dated and signed "Satisfactory Test" label to tested component.
- E. Schedule tests and provide notification at least 7 days in advance of test commencement.
- F. Report: Submit a written report of observations and tests. Report defective materials and installation.
- G. Tests: Include the following minimum inspections and tests according to manufacturer's written instructions. Comply with IEEE C57.12.91 for test methods and data correction factors.
 - 1. Inspect accessible components for cleanliness, mechanical and electrical integrity, and damage or deterioration. Verify that temporary shipping bracing has been removed. Include internal inspection through access panels and covers.
 - 2. Inspect bolted electrical connections for tightness according to manufacturer's published torque values or, if not available, those specified in UL 486A and UL 486B.
 - 3. Insulation Resistance: Perform megohmmeter tests of primary and secondary winding to winding and winding to ground.
 - a. Minimum Test Voltage: 1,000V, dc
 - b. Minimum Insulation Resistance: 500 megohms
 - c. Duration of Each Test: 10 minutes
 - d. Temperature Correction: Correct results for test temperature deviation from 20°C standard.
- H. Test Failures: Compare test results with specified performance or manufacturer's data. Correct deficiencies identified by tests and retest. Verify that transformers meet specified requirements.

3.4 CLEANING

- A. On completion of installation, inspect components. Remove paint splatters and other spots, dirt, and debris. Repair scratches and mars on finish to match original finish. Clean components internally using methods and materials recommended by manufacturer.

3.5 ADJUSTING

- A. On completion of installation, inspect components. Remove paint splatters and other spots, dirt, and debris. Repair scratches and mars on finish to match original finish. Clean components internally using methods and materials recommended by manufacturer.
- B. Adjust transformer taps to provide optimum voltage conditions at utilization equipment throughout normal operating cycle of facility. Record primary and secondary voltages and tap settings and submit with test results.
- C. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in readjusting transformer tap settings to suit actual occupied conditions. Provide up to two visits to Project site for this purpose without additional cost.
 - 1. Voltage Recordings: Contractor performed. Provide up to 48 hours of recording on the low-voltage system of each medium-voltage transformer.
 - 2. Point of Measurement: Make voltage recordings at load outlets selected by Owner.

END OF SECTION 16461